4-10 July 1985

It's the best selling weekly

Vol 4 No 27

tari revives 260ST

ATARI has revived plans to manufacture a low-cost version of its eagerly awaited 68000-based ST model, originally shelved in mid-May.

It now seems that Atari will release a 258K version of its ST range - a 260ST - in this country, possibly for an autumn launch. The machine replaces the 128K 130ST, plans for which were dropped in

The new 260ST model will is launched in the US in September.

Atari will offer the machine in two versions - a stand

Steven

built-in disc drive, similar Commodore's two versions of the C128 micro with which Atari hopes to compete. The model with disc drive will look slightly different from the rest of the range - the casing being much larger to accommodate the single 35" 500K drive.

"The 260ST and 260STD machines will cater for the low-end mass market. Now that the 520ST is being sold in specialist computer stores, the new machine will be available from general retail channels," said James Copeland, Atari's vice president of marketing.

"The stand alone model will cost \$399 (around £300), and the disc version \$499 (around £390). The machine continued on page 4 >





Spielberg's latest film The Goonies, is being raleased in the UK at Christmas. US Gold will be importing Datasoft's computer game in September. The game closely follows the film's plot involving a gang of children, who bored with long weekends in their sleepy seaside town. take on a quest to find pirate treasure in a network of underground tunnels, and caves pitting their wits against escaped

'Sir Clive Ltd'

SOME of the confusion surrounding the announcement of Robert Maxwell's proposed takeover of Sinclair Research is beginning to

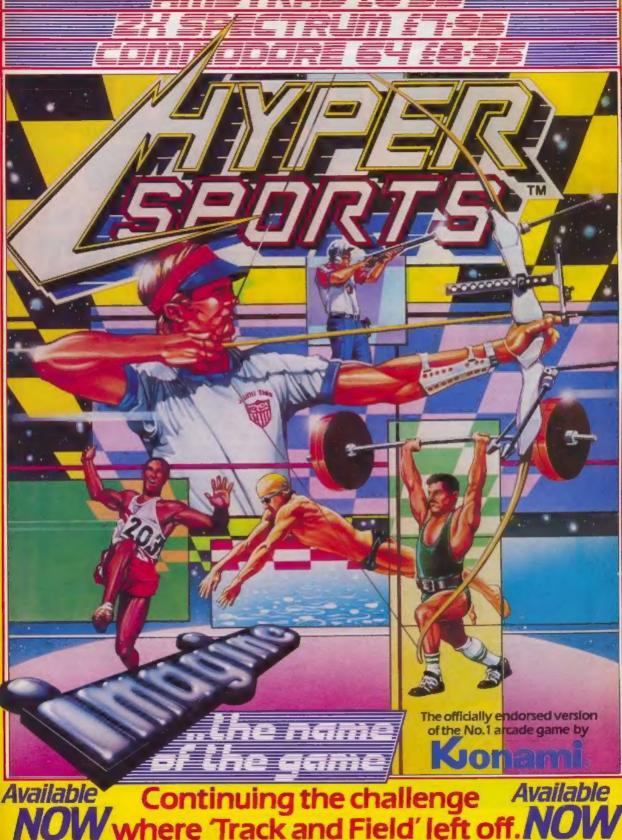
Conflicting reports have appeared of the role Sir Clive will play in the future of Sinclair Research and of his intention is set up a company of his own. It now seems that Sir Clive's new company is being set up to facilitate his long term involvement with Sinclair Research.

"Sir Clive will continue to direct the company's research and development, but he will do so not as an individual employee, but as a company - say, Sir Clive Sinclair Ltd," explained Nigel Searle, Sinclair's head in the US. "The new company will exist to provide services to Sinclair Research, which will primarily be the availability of Sir Clive himself."

Nigel Searle also confirmed that Sinclair director Robb Wilmot will continue III head the search for external funding for a separate waferscale integration company to the tune of around £50 million. However, there has been some question over the nature of the technology Robert Maxwell will preside

continued on page 4 >

ON COURT TENNIS BOUNCES IN



Imagine Software is available from: WHSMITH, Warmers WOOLSHORTH, LASKYS, Rumbelows, Greans, Spectrum Shops and all good dealers.
Imagine Software [1984] Limited-6 Central Street-Manchester-M2 5NS-Tel: 061 834 3939

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EDITORIAL

ack Tramiel's influence on Atari is becoming clearer. As Commodore always did under his command, Atari is developing the technique of keeping people guessing with a constant round of new micros being announced, then dropped.

What will the final line-up look like? Who knows - but Atari needs a low-cost ST and the 260ST is flavour of the week. At \$498 for a 16-bit micro with 256K of Ram and built-in disc drive

it certainly ought to keep Atari in the headlines.

The biggest problem any 16-bit home micro faces in the cost of software. The new wave of machines such as the ST, QL and even Amiga may be quite cheap to buy, but their programs will undoubtedly be a lot more expensive than the £5.95 we are used to paying for a top quality Spectrum program.

If say, Ultimate, releases a game for the Spectrum there are something approaching a million potential customers, the cassette costs around 30p to make, and their programmers

only have to write 40K of code.

On the new 16-bit micros, there is no user base, the disc adds about EI to the price and up to 256K of code is required.

Development times are bound to be lengthier, particularly where a particular title has been specifically commissioned and the quality of the conversion is all-important.

On the ST the Gem operating system is designed to allow software houses to maximise their development time by writing in C and transporting the same program across a number of eachines. This is fine for home business and utility packages. But what about entertainment software? To be competitive if must make the most of the particular machine's features, and to do that it must be written directly in machine-code.

All this means we must expect prices around £25 which are unlikely to drop until there is a substantial user base.

Also, don't expect incredible software for the new machines straight away. To begin with the top Spectrum software will knock the socks off its ST rivals.

But, make no mistake, the ST is capable of a great deal more.

Editor David Kelly News editor Christina Erskine Features editor Graham Taylor Software editor John Cook Staff writer Martin Croft Production editor Lynne Constable Editorial sacretary Lucinda Les Advertisement manager David Lake Assistant advertisement manager Jeromy Kite Advertisement Executive Diane Holyoak Classified executive David Coon Administration Geraldine Smyth Managing editor Duncan Scot Publishing director Jenny Ireland. Published by Sunshine Publications Ltd. 12-13 Little Newport Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers Reprographics Services Ltd. 4 Roger Street, London WC2H 7PP. Tel 01-437 4343 Typeset by Publishers



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Computer Trade Association Magazine of the Year

Crisis talks at Amiga's US Acorn continue

AS ACORN's financial crisis deepened last week the company was involved in urgent talks with the BBC, its major manufacturers, merchant bankers Close Brothers, and Olivetti, to try to put together its second rescue package

The company is understood to have discussed with the BBC the possibility of reducing royalty payments for sales of the BBC B and B Plus. and postponing payment of debts. Since the launch of the BBC micro over three years ago, the BBC is estimated to have earned around £11 million in royalties from Acorn.

The company is also holding further talks with its major creditors, the three main manufacturers of Acora's machines. BSR International, AB Electronics, and Wongs Electronics, to try to again reschedule its repayments of debts. Only last February Acorn arranged its debts to manufacturers to be paid in instalments up until early

At AB Electronics, its chairman, Henry Kroch, said last

Atari's 260STD

continued from page 1

will both contain an internal modulator so that they can be used with both a television or

the 260ST is 'When launched, the operating software, that is, GEM, Atari Basic and Logo, will all be in Rom."

It seems likely that the 260ST will form the £400-£500 machine promised by Alari UK earlier this year (see Popular Computing Weekly, June 6), although it has not yet been officially decided.

"We in the UK are very keen to have at least one of these machines - though perhaps not both," said Arari UK's general manager Simon Westbrook. "It's a new decision taken in the States to definitely bring it out, but I think the idea of a built-in disc

week. "We are talking to Acorn about its present financial difficulties, though as yet we have not made any firm decision." He also commented on the view that Acorn may withdraw from marketing machines entirely, and become solely an R and D company, "It is difficult to talk about new directions because there has not been a managing director since the rescheduling in February.

"The acting MD, Alex Uboldi, has spoken a great deal, however, about R and D prospects.

Henry Kroch also confirmed that production of BBC and Electron computers had been drastically reduced since Christmas.

As Acom's financial problems continue, Olivetti must now choose whether to inject more cash into Acom by taking substantially more control over the company - at present it owns 49.3% - or to write off the £10.4 million it has so far invested.

· Acorn has officially cut the price of its new BBC B Plus, according to one independent retailer. "Acorn cut the price from £499 to £449 just a week ago," said a spokesman for Capricorn Computers in Colchester.

for July 23

THE US launch of Commodore's much feted Amiga machine will now take place on July 23. The launch was originally planned for July 18.

Commodore US would not, however, be drawn on a date when the Amiga would reach American shops, nor would it give a firm date for the British launch.

"At the moment our priorities are the C128 and 900 machines - which we need to get out," said Susan West of Commodore US. "The Amiga is still on for a January launch in Britain, but all the moment it a not at the forefront of our

Compunet expands after 'teething troubles'

AFTER overcoming what II describes as "early teething troubles", Compunet now plans to expand its services during the rest of 1985.

It has recently introduced an on-line-chat feature, where users can up-load messages. Messages can be either general - addressed to all those on the system, or aimed at one particular subscriber. Up to 15 pages can be sent for lp per page.

Also new to the network is a document transfer facility. This means that word-processed files, for instance, can be up-loaded into the system,

drive is a good one. Amstrad has made everyone over here wake up to the fact that it is nice to have everything compact and in one box.

Atari has also fixed release dates for some of its peripherals in the US. The IM floppy disc drive is due out within the next month at \$399 (around £300), and the 10M hard disc in August. The company still hopes that its compact disc Rom player, which was shown for the first time at this year's Summer CES, will be available in the US by the end of this year.

and then down-loaded by other users

"We have now got over the problems we had in January and February when we underestimated the length of time people spent on Compunet, and some of the Commodore modems were too oversensitive to line noise," said Jane Firbank,



editor of Compunet.

However, some of the facilities announced last year such as the home banking and estate agency services, have yet to appear.

"Home banking will be available early next year, and the estate agency service is temporarily in abeyance, though it's still a possibility," Jane continued.

Gargoyle to abandon Celtic myths

GARGOYLE GAMES is to forsake the Celtic background of its last two games, Tir Na Nog and Dun Darach, in favour of

According to company sookesman Greg Follis, Gargoyle is working on a new adventures"

The title for the series of three at present planned is The Siege of Earth trilogy.

The first game, Marsport, is set in the twenty-third century, and is due for release at the end of September. It will run on the Spectrum and Amstrad, and will cost £9.98.

The second game, Fornax, is planned for Christmas, with the third, Gath, to come early in the new year.

'Sir Clive Ltd'

"There have been suggestions that Sir Clive will hive off research into using bipolar techniques entirely separately, leaving Maxwell with the more conventional NMos technology," said a Sinclair spokesman. "We really can't comment either way, since nothing of that detail has been hammered out yet. After all, Maxwell is not yet chairman of the company."

Amstrad hits tape copy row

AMSTRAD has run into a legal storm over its dual cassette player which allows tape-totape copying.

Last week the company—which itself has a major software division—was told by a High Court judge that its twin cassette recorder incited buyers to infringe copyright of music or software on cassette.

The dual tape deck, introduced in spring 1984, of which around 25,000 have so far been sold, is being advertised as capable of recording from one tape to the other at twice normal speed. Amstrad received complaints from the British Phonographic Institute, which protects the copyright interests of the music recording industry.

Amstrad then applied to the High Court, seeking a declaration that its dual tape deck was lawful. The judge declined to make that declaration.

Amstrad intends to make an application for an appeal against the decision this week. It plans now to carry on selling the machine, but not to advertise the product. "It appears that the judge was concerned not so much with the nature of the equipment, but the way in which Amstrad advertised it." said Amstrad's solicitor Tony Willoughby.

While dual tape recorders have been available here since 1979, Amstrad drew attention in advertisements to the ability to record at twice normal speed. In 1984, Aiwa withdrew from the market a similar machine which recorded from tape to tape at four times normal speed, in agreement with the BPI.

Amstrad's packages contained a warning of breach of copyright notice. "Two out the three people called by the BPI knew they were breaching copyright in recording," continued Tony Willoughby. "It seems to be a comparable situation to the health warnings on cigarette packets - people keep on smoking regardless."

Comms package and database for 464 users

A NEW database, Viewfax 258, is being set up on Prestel specifically for Amstrad users. The operation in being headed jointly by Lindsay Reid and Micronet 800. Micronet will market Viewfax 258.

"We have a target date of October 1 to launch the system," said Lindsay Reid. "We're aiming to have between 2500 and 3000 frames, so it will be large database by Prestel standards."

The only approved communications package for Viewfax 258 so far available is the newly launched Multi-Port from Skywave Software.

Multi-Port comprises an RS232 serial port, which supports a range of baud rates, from 300/300 up to 9600/9600, a 24-bit parallel port, which can be used as a general purpose I/O port, and a sideways Rom card, which takes Skywave's Multi-Com.

Multi-Com provides four colour text and graphics in 40 col mode, a printer dump and save to tape or disc facility.



Currently the product only fits the 464, but a 664 version in in development. Skywave is also planning its own bulletin board for Multi-Port users called Skytel.

Multi-Port should be available now, at £99.95. Details from Skywave Software, 73 Curzon Road, Boscombe, Bournemouth (0202 302395.)



Back to Basic

Tatung Einstein which includes as part of the package you buy a disc containing a version of BBC Basic.

What I want to know is, when the BBC Basic disc is loaded, will it just run only 100 per cent Basic programs or will it run (once transferred to 3½ inch disc) any programs that the BBC runs?

Are there any other versions of the Basic language available for the Einstein - eg Spectrum, Amstrad or Commodore Basic?

> Barry Barwick 12 Carslake Road Collyhurst Manchester 10

The answer is that compatibility with BBC software only extends to programs written entirely in BBC Basic. No other versions of Basic are, as far as I know, available. The copyright for each other Basic varient rests with the relevant manufacturer.

Looks can kill

Your review of the Enterprise 128 stated that there existed only the one minor bug in the Basic Rom. Your reviewer missed a fatal bug in one of the potentially most useful commands which the Enterprise has.

The command in question is the Look command whose syntax is as follows: LOOK Echannel, AT x,y: (variable name) The purpose of which is to 'look' at the graphics page and assign to the variable the palette colour number at point x,y. The channel part is optional, as is the AT part—the current cursor position is used instead. What is not optional is the variable name, which if missed out will cause a spectacular crash.

The Look command, though, is useful for more than just graphics. It serves the same purpose to the text screen when channel = 102, but the AT clause cannot be used. The usefulness does not end here as the channel system allows the command to be used to wait for a output from any channel, a good example being the keyboard. The Enterprise does not have



a documented command to wait for a keypress but LOOK £105:a serves this purpose with the ascii code of the key being placed in variable a.

There are also some undocumented commands and functions hidden inside the Rom shown here:

Print VerS

Will print a string telling you the version of Basic you have:

Print VerNum

Will print the version number of Basic:

Set Tape Protect

On

Stops future files saved being copied using Basic's Copy command.

Also in the Rom among the other commands, etc. there is the word Font, but I have yet to discover what purpose this serves. I would be interested to here from anybody who knows.

Duncan Sinclair 8 Tiptree Gardens, Bearsden, Glasgow.

Beatlemania

Taargh (sob). We would like to express our utmost disgust and displeasure at the attitude of the obviously tone deaf philistine who had the audacity to suggest that the Beatles could be anything but the greatest purveyors of rausical culture who ever have or ever will bring pleasure to the ears of humanity.

The neo-hippies (eg Neil) are by no means representative of the phenomenom that was, and still is, the Beatles. Such references show that the reviewer either has absolutely no idea what he is talking about or has had his head in a bucket for the past twenty-three years.

Just thought we'd let you

know.

M Ward A Smith 4 Farfield Avenue Hepworth Huddersfield West Yorkshire

First Supertramp and now the Beatles. Is nothing sacred? I can't see a thing in here.

(Just for the 'record' the reviewer in question has Sergent Pepper, The White Album and Magical Mystery Tour and he says he has played them at least once.)

Free trip

Some American-based companies appear to be being over enthusiastic when it comes to marking up their products for sale in the UK.

In the US a typical price for a Commodore MPS801 printer is \$179 (around £137). Over here the same printer costs £230. Also the US price for the Atari 1027 printer is \$219 (around £169). The UK price is around £249.

A particularly good bargain is the SX64 Commodors portable micro with a US price of near \$749 (around £575) and a UK tag of £895.

This means you could afford to collect it personally, have a brief stay in the US and still have some change left!

The only snag is you'll need to run any US micro you buy from a monitor because the US TV modulator is different.

> J M Shearing 1 Dell Cottages Log Mill Lane Godstone Surrey

What cost?

Reviews of programs costing £89.95 and £95.95 (June 20 issue), both for the QL, would hardly seem to be in keeping with a magazine entitled 'Popular' Computing Weekly.

Could future reviewers please stick with popular computers and affordable

software.

John Ure 6 Oak Avenue Runcorn Road Birmingham

Language packages always tend to be more expensive than other types of software. The price of these QL programs is around twice that of an equivalent package on say, the Spectrum. Nevertheless, with so little software currently available for the QL I believe that the interest from QL owners justifies coverage of the occasional packages at this price.

Micronet competition

n conjunction with Thames TV's Database programme and Micronet 800, Popular Computing Weekly is running a four part competition to win free yearly membership of Micronet and Prestel.

The competition takes the place of four clues to be printed in the magazine over four weeks each divided into two sections. So what do you have to do? That's the first riddle: "line parts A and B together.

To map a final clue, The answer to the crossword,

Is where they all cross through."
Solve all the clues over the
next four weeks and keep
your answers with you. In-

structions on what to do with the solutions and where to send them will be printed with the fourth clue.

To kick off this week, here is the first clue:-

Clue 1 Part A

"The Roman's Venia Belgarium became,

The Wessex Capital during King Alfred's

reign,

In 1603 Walter Raleigh was tried, In the City's gaol Thomas Hardy's Tess died."

Part B

CBTGMKL sounds Welsh already

Trithemus

Ingenious...



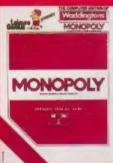
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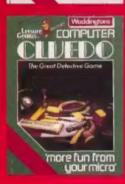
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Hardware Reviews

Nothing wrong

Hardware Precision Pixel Plotter Micro Amstrad Price £3.75 + £1.00 p&p Supplier PS Graphics, 161 Mountview Road, London, N4

remember the first pixel plotter pad I bought for the Spectrum - it was only after I got it home that I realised the the number of squares on the page didn't even match the resolution of the screen.

Thankfully those days are long past. This Amstract plotter has large A3 sheets divided into full screens of character and pixel squares, as well as having the appropriate scales printed alongside. Beneath the screen map are eight smaller boxes you can use for design of UDGs.

Although there is nothing startling or original in the package the manufacturer has managed to avoid getting anything wrong, and I should imagine it will be welcomed by all Amstrad owners trying to do interesting things with the graphics. It is also very reasonably priced.

You are presented with 25 sheets plotted to fit mode 0, low res, and 25 sheets to fit mode 1, high res (if only the software produced came in that ratio too). The sheets are just about transparent enough to be used for tracing of a well outlined drawing or photo.

inside the front cover is also a wealth of info related to the machine's graphics, including a full character set, with decimal and hex codes, a summary of the inks available and a very useful table I have never seen before concerning the codes that control pixel colour in mode 0.

The only point of criticism is that, despite claims that it is designed for both Amstrad machines, one table that summarises the available graphic commands misses out the extentions to the 664's Basic.

Tony Kendle

QL with the DR effect

Hardware CP/M 68K Price From £355 (200K disc drive plus CP/M 68K) Micro Spectrum QL Supplier Ouest International Computers, School Lane, Chandlers Ford, Hants SO5 3YY, Tel: 0421 66488.

n paper the Sinclair QL looks like a credible business computer, yet so far it has failed to convince the business world because of its early reputation for unreliability, its obvious non-standardness, and its lack of outstanding features when compared to more traditional computers. Sinclair Research recognises the problems and is trying to overcome them with expensive advertising as well as the release of Version I of the Psion software.

Quest International has attempted to get around these same problems by offering an alternative to the microdrivebased QDOS in the form of a floppy-disc system which can be used from ODOS. and hence with the Psion software, which can alternatively be used with CP/M 68K. a version of CP/M produced for the 68000-series microprocessors. There are now several companies offering disc drives for the QL in a range of capacities. Quest is unusual in providing one which requires the disc-driver software to be booted from microdrive rather than being resident in Rom, a design decision which was taken in order to allow alternative operating systems to be used. The first such operating system available, CP/M 68K, is a logical choice because it is written around the 68000. In principle, other possibilities exist for the future, such as Digital Research's GEM or a Unix derivative such as OS-9/68000 and Uniflex, but CP/M 68K is available now.

CP/M has been around in one form or another for around ten years. It was first 8080A for the microprocessor to make use of floppydisc technology and was the first successful machine-independent microcomputer operating system. It soon became associated with the Z80 microprocessor and became the de facto

standard for business computers. Only 16-bit development 10 microprocessors could shake CP/M from this position. IBM were fully aware of the situation and wanted, with the introduction of the IBM PC, to offer a system which was sufficiently close to CP/M to be accepted by most users and yet technically unique in order to dissuade competition. IBM demanded that many CP/M features be included in PC-DOS (which annoyed the author) and made sure that PC-DOS was sufficiently like CP/M to permit software producers to be able to transport their CP/M programs to PC-DOS with relative case.

In the meantime Digital Research was busy upgrading the old 8-bit CP/M (now called CP/M 80) to run on the 16-bit 8088 and 8086 microprocessors and renaming it CP/M 86. This did not have the desired effect of challenging PC-DOS, and Digital Research have been trying ever since to regain their hold on the market by bringing out a series of CP/M operating systems, including the multitasking Concurrent CP/M 86 (which, in its latest version, claims a small degree of compatibility with PC-DOS), Concurrent PC-DOS for the IBM PC offering windows and multi-tasking along with improved compatibility with PC-DOS, CP/M 68K for the 32-bit 68000, and most recently Concurrent DOS 286 for the RO2RG

Thus CP/M 68K for the QL looks like it



should be a good idea. There are literally thousands of CP/M 80 programs and this would seem to offer a better chance for the provision of business software than ODOS. Unfortunately it has not worked out quite like that to date. Even the best of CP/M III software, such as Wordstar and DBasell, although still very popular, is beginning to look a little sad when compared to the versatility and performance of the newer 16-bit only software, and few authors are interested in performing the conversion. The vital American market has not responded to CP/M 68K and the number of applications available under CP/M 68K remains very small.

CP/M 68K (in common with the other CP/Ms, PC-DOS, MS-DOS, and so on) is not Rom-based and thus must be loaded from microdrive or disc each time the machine is switched on.

Commands available once the operating system is loaded are concerned with handling files held on disc and microdrive. Files can be listed, erased, copied to screen, and executed. A number of utility commands are also provided on disc or microdrive with the system which are in fact programs which run under CP/M 68K. These utilities include a 68008 assembler and a C compiler. which are of more interest to programmers than business users, and some advanced file-handling programs. Of interest to some is the ability to read and write data to disc using the same format as the IBM PC. This does not mean that programs can be transferred but the possibility exists for the transfer of data and thus, for example, the QL could be used at home to do simple word processing which could then be transferred to an office-based IBM.

The provision of CP/M 68K on the QL seems unlikely to sway business opinion very much in its favour, principally because of a lack of applications. The provisions for running programs in C may prove valuable, as many applications these days are produced in C, but this is only of interest to programmers.

But business users require working application programs now.

John R Cochrane

Hardware Reviews

New Converts

Hardware Interface III Micro Spectrum & Interface 1 Price £39.95 Supplier Micro Centre, Bridge Street, Evesham, Worcs.

Hardware Microdriver Micro Spectrum & Interface | Price £44.95 Sup plier Mirage Microcomputers, 24 Bank Street, Braintree, Essex CM7 TUL.

II terms of reliability Spectrum Microdrives have now somewhat proved themselves. But if you invest in one, what do you do about your existing tape based software and indeed the dearth of new microdrive based material? What use is high speed loading if there's nothing to load.

For people who aren't high powered machine-code programmers able to instantly disassemble code there are now two hardware products claiming to do

the job for you.

They both use a similar principle of operation, using non-maskable interrupts. This is a line unused on the Spectrum, which, when normally triggered, resets the machine. These devices use this, in conjunction with special Roms of their own to dump the whole of memory at any time onto cartridge, having waited for the game to load.

The first one examined is the Interface III from Evesham Micro Centre, costing £39.95. It comes in the usual sort of black box that plugs into the Spectrum edge connector, with a push button switch on the top. Inside, there is a simple Pcb, with just eight chips on it. There are seven standard TTL, for the decoding and Rom paging. There is no through connector, but as you only have to connect it once when you convert a program, this should not be a problem. To convert anything simply load it as normal, then at a suitable point press the button. It then copies the entire machine Ram and registers on to a cassette, in a special format. Next, you have to reset the machine, then load in the conversion program from cartridge or cassette. This takes the special format tape and converts it into a couple of files on the cartridge. To use, simply switch on, put the cartridge in, and type Run in the usual way. The Interface III is only necessary for the first stage of the operation it doesn't always need to be present.

There is one snag with the Interface III - it has to use a little Ram for a scratchpad while loading, from cartridge and it uses a small section of the screen. This can cause difficulties with programs that do not re-draw the screen, or those that contain 'invisible' machine code, requiring some trial and error on the exact timing of the button press.

The rival system is the Mirage Microdriver, costing a fiver more at £44.95. While the principle is similar, there are quite a few differences. The box is similar to Interface III. but with a through connector, as it has to remain in place all the time.

Inside there are just three chips - a 4K Eprom, 4K Ram, and a Pal for the decoding. The inclusion of a Ram chip gets around the problems of the Interface III.

To use it the program is loaded in the usual way from cassette, then at any time you like you press the button. A small menu appears in the top 3 lines of the screen, with 5 options. The first one you select is normally Save, which dumps the machine out onto a cartridge directly. The part of the screen used for the menu is restored before the Save, and the internal Ram is used for buffering, so no corruption takes place.

To load a converted program is simple - just switch on, press the button on the box, choose the Load option, and give it the filename. The machine state is stored in a one specially coded file, of just over 48K in length, so you can only get one per cartridge. Both devices worked well, though I preferred the Microdriver, because of its ease of use.

Andrew Pennell

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Camel Ye Faithful and knuckle down to a session of JEFF MINTER'S newest smasherooni —and a continuation of the Ungulant Saga, TONY TAKOUSHI reports...

happens when Rory the savage guinea pig makes his biting entrance You control a mother liams and her two children, protecting them from danger by means of a killdroid which removes obstacles by

fouching them. Well animated with good baroque and roll musical accompaniment and excellent, varied backgrounds for you to walk through, the

game will especially appeal to fans of Revenge Of The Mutent Camels — a great game now also available for the Atari at £7.50.

Keyboard by John Walker

North Western Evening Mail, Barrow-In-Furness

LLAMA MIA

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There comes a time where every reviewer has to own up — after reading through the many lines explaining the plot of *Meme LLama* several times. I am stall baffed. This is what five got so far the plot, incomprehensible, involves simulated video games on a planet called Led-Zepp IV (was that the one with *Stairway to Heaven* on it?), first part of game is a grid in which you choose what planet and how many aliens you want to light. Part two sends you to the planet where you defend your Llama offspring from attack from various kinds of alien, one of which looks like a buffale. However, there are things called Antigenesis devices, alies Retrogenesis devices, which seem to be the Minter equivalents of smart bombs in that they reduce the number of aliens in certain ways. There appears to be all kinds of strategic elements to the way the game is played and it zaps like crazy. Beyond this, I don't dare to comment. Program Mama Llama Price £7.50 Micro Commodore 64

Popular Computing Weekly

Watch out — this guinea pig bites! MAMA LLAMA

John Walker

From the wagging ears and tail and hodding heads and curtises of flamas on the opening screen, Mama Llama may took like just another tame beast with her two babes. But not Jeff Minter behind it. Rather, the plaster on one of the babe's cheek in the cover group shot is more an indication of this hazardous, fast-paced trauma.

And then there's the small but threatening KillDroid that hovers overhead to protect this cozy family. To do any good, however, you have to moster it's inertia-controlled movement -- no easy feet if it's possible at all

As usual, instructions are very involved even not considering the detailed account of what inspired Minter to produce his latest ungulates. Your choice of playing modes, difficulty, scenes, etc. are numerous since you pick from a grid. Minter calls it a "totally amorphous wave select system

The harrowing pace of Mama Llama is daunting even in the beginner phase but substantial practice sharpens your skills. Meanwhile the changing scenery, situations and attackers keep the player occupied. This is a toughte probably best conquered by dedicated Llamasoft fans rather than those just seeking an introduction to Minter's mind.

Considering that, the action is good and Mama and the player could become rather attached to Mama and her babies. All around,

it's off the wall enough to keep the experts amused and glued to their joysticks. Type of game: Arcade. Fast loader: Novaload. Graphics: * * * * Sound: * * * Playability: * * * CCI flating: * * *

Commodors Computing Price: £7 50 cassette

MAMA LLAMA MAMA LLAMA MAMA LLAMA MAMA LLAMA

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Eye of the Tigress

Plotting to kill. Martin Croft exposes the operation of the 007 games' creators, Tigress.

here was a time when computer games really were written by teenagers, who came up with wacky ideas, worked out by trial and error just how to implement them, and then programmed the whole thing themselves - usually in the gaps between various sets of exams.

More often than not, they would also set up companies with really strange names, publish the games themselves. and go quietly bust.

Those days are over. specialisation is the name of the game. One set of people designs the games, another does the programming, yet another the marketing - and a completely different set rakes in the money.

One of the best examples of this new type of product is the latest Domark trame, View a a Kill, Domark are publishing it, a company called Sofistone did the programming, the game design was by Tigress Marketing, who produced a storyboard based on the script of a film featuring a character who was originally created over 30 years ago

Tigress Marketing used me be in marketing - no surprise there. But now they specialise almost full time on writing game scenarios for people who can't write their own.

Tigress is really three people - Beth Wooding, David Bishop and Chris Palmer. Listening to them, you get the impression that the most important thing about a game is the design of what happens in it - the story, if you like.

The rules, the permissible actions, the victory conditions, the penalties all take precedence over the mechanics of

programming. As Chris put it, "we do the storyboarding to a level where we can give to a 'dumb' programmer - technically brilliant, but no creative thought."

"Software houses," Beth chipped in, "got their fingers burnt because they were trying to do too much - often they had programmers who just couldn't write games."

View to a Kill started life back at the tail end of 1984. Domark, with whom Tigress had worked in a marketing function on Eureka, asked them E prepare an initial treatment for a game based on the latest

"Domark had contacts into the company running the rights for Bond," Beth recalled. "We had to do a lot of work producing the storyboard to convince the people at Pinewood to give Domark

'Pinewood were reticent at first, but the storyboard impressed them - though they didn't know what the computer game was all about.

"I think the thing which clinched it for us was that we weren't just using James Bond to sell something which wouldn't sell otherwise." said Beth pretty convincingly.

"We took quite a gamble," Beth continued, "that's the thing about storyboards, there's nothing before it. We have to take all the risks.

Tigress started risking all on the project last October - "Pinewood didn't even have a film!" Chris wryly observed.

"A lot of the game was written on the back of the film storyboard," he said. "The script wasn't much help - it's only when you read a Bond movie script that you realise just how little dialogue there 15 in it."

Dialogue may be sparse in a Bond film the finer nuances of human emotion are left to Rager Moore's eyebrows - but you can be sure of plenty of action sequences. Tigress identified six which they felt had potential to be turned into computer games.

Of the six, only three are to be found in the final package. These are Paris Chase, City Hall and The Mine. The ones which didn't make it were a ski run game, with Bond simultaneously taking on a downhill slalom and enemy agents, a horse race game, ditto but the Grand National, and a fire engine game, in which 007 steals a fire engine and, for a change, outwits the police.

The main reason for only half the proposals seeing the light of day seems to have been time. From the first idea to producing the final product took about six months - fairly speedy for three games, an intro and an ourro, on both Spectrum and Commodore - ten separate programs in all.

Having identified potential games, Tigress then prepared 'treatments' of each of the six. These treatments - all on paper rather than screen - included basic screen designs, what players would have to do and how they could achieve these objectives.

"We put in the game play first, then we add the nice touches that the computer can produce," said Chris

"Previously, games were written by programmers - they'd find a new utility, and then write a game around it. More often than not, you load up a game and it has great scrolling or great sprites - but that's it. Our job was to make sure the whole thing works as a game."

"Then we go to the programmers and say we want a map so big, with eight levels of animation on the sprites, five levels of depth - that sort of thing."

Having handed over the final design treatment to the programming team.



The Tigross team

Softstone, Tigress' involvement didn't end there

"I hate to think," said Beth, "how much time we've spent journeying to Camden." It's a long way from Putney.

"At the start of the project, we didn't have a programming house, so we couldn't get their input. Softstone only got involved later on." That meant they were forced to make some assumptions which later caused problems. For example, in the Paris Chase game, Bond has to manouevre his car through the streets of

"We wanted a fairly accurate representation of Paris on the on-screen aerial view but when the programmers had a look at it, they said no way. They couldn't do smooth scrolling and diagonal streets at the same time."

Another restriction facing the design team was that James Bond could never

After all, as everybody must know by now, 007 is indestructible. No matter how serious the situation he may find himself in, he always escapes.

That meant standard arcade punishments like the loss of a life were ruled out from the start. As a result, Tigress incorporated the daze factor - when the player does something wrong, Bond sulfers a time penalty. If Bond fails to save the world (unthinkable!) before time runs out, he gets another chance. It's only a game.

Rather neatly, the time factor is included in the code the player gets after completing each game - load the code from game one into game two, and the program knows just how much time Bond has left in which to save the world. The better a player does on the first two



(I to r) Both Wooding, Chris Palmer, David Bishop

games, the more time 007 can spend in the silver mine in game three.

View to a Kill - the finished game - is very much a product packaging operation, something Domark excels at. It would be uncharitable to blame Tigress for the games' limitations - they had a job to do and they did it.

They are, however, working on other projects, some of which appear as con-

Street Life

strained as the Bond game. Others, however, seem to offer a designer more scope - many of these are game ideas which one or other of the Tigress team has just suddenly come up with.

Most of them were top secret, since they involve complicated licensing deals – however interested in imagination Beth, David and Chris might be, they understand the advantages of product recognition.

Currently, they are working on a design for a game based on the BBC TV series Yes, Minister.

It will be a largely text adventure, requiring strategic decisions from the player. The objective, in best Civil Service tradition, is to ensure that absolutely nothing is achieved.

Mosaic is to publish the Yes, Munister game, while the programming is to be by the Ram-Jam Corporation, better known for their text and graphic adventure Valkyrie 17 - hardly dumb programmers.

Tigress has also submitted m design for a Duran Duran game, or rather a series of games - one for each of the band, appropriate to his instrument. That however is still up in the air "We're waiting for their manager to get back to us," said Beth.

Explaining to the band how their music is going to sound on the Spectrum will be an interesting marketing exercise.

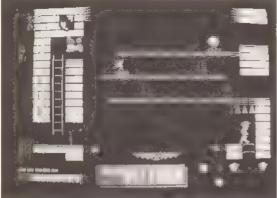
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Software Reviews



Dashing

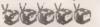
Program Dynamite Dan Micro Spectrum 48K Price £6.95 Supplier Mirrorsoft, Maxwell House, Worship Street, London EC2A 2EN.

ade up William Tell overture. Announcer (in dramatic voice): "Will the dastardly Dr Blitzen's plans for world domination succeed? What of his assistant, the devilish Donna? Only one man can collect the eight sticks of explosive and blow the safe before escaping in his trusty airship, but where is he? Where is Dynamie Dan?"

Yes, the Spectrum has a new hero, cast in the mould of all those dashing do-gooders of yore, those Fearless Fosdykes who defeated fiends like Blitzen before dashing off to the club for cocktails. And that's one of the features that sets this game apart from other anonymous alliterative imitations of Matthew Smith's Miner - the hero and villain show character.

There are also objects to collect for points, extra lives or special effects, such as the oxygen that gives you a few seconds to bop the baddies with impunity. There's also the need to maintain energy by eating food, but most importantly there's the sheer complexity of the routes around the screens and the initial uncertainty of what you'll find when you step anto the next one. It all calls for split second timing and pixel accuracy and I found I near impossible to get very far... but then again I remember most people said that about ISW at first.

John Minson



Painless

Program Spectrum Assembly Language Course Micro Spectrum Price £12.50 Supplier Clentop Publishers Ltd., Standfast House, Bath Place, high Street, Barnet, Herts. EN5 1ED

true: taking your first true: taking your first step into assembly language is a leap into the dark. What the novice machine coder needs is a guide to dispel the terrors of all those LD, POP and even JR NZ instructions. Given this friendly hand it doesn't take long to realise that assembler itself

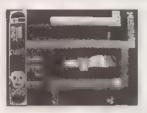
isn't as complex as it looks; in fact it's extremely logical. The main problem then is how you use II and what you use it for.

This 'Dr Watson' course consists of a book and tape in one box. I was initially disappointed to find the opportunity to illustrate the tuition with the program has been missed, apart from decimal/ binary/BCD/hex conversion. But strictly low tech (ie, paper and ink) lessons hardly matter when they're as clear as this. Martin E Thompson has written a no-nonsense introduction to the world of mnemonics, moving through them in a sensible order and not becoming involved with chip architecture or hex until absolutely necessary. In addition there are copious appendices including several ROM calls

Backing up this is the assembler itself which is clear and efficient to use. There are a couple of niggling typographical errors in the book but the package price is extremely reasonable. While it won't teach you everything about assembler it will get you started with minimal pain.

John Minson





Satanic maze

Program Go To Hell Micro Spectrum Price £6.99 Supplier Triple Six, PO Box 190, Maidenhead SL6 1YX.

omething wicked this way comes. There is Germanic lettering with blood dripping from it on the cassete box, the game is set in hell, the company's name is Triple Six, number of the best. It can mean but one thing... Devil worshippers? Worse! Heavy metal fans!

Somewhat surprisingly, forthe jaundiced reviewer, behind if this satanic kitsch lies a reasonable game. More

surprisingly it belongs to that 'dark ages' genre, the maze game. Of course it's bigger than mazes used to be (60 screens) but the quest to find objects, in this case holy crosses, remains the same.

What brightens this one, albeit with a sulphurous light, is the landscape of Hades, with passages lined with suffering souls, some just wide enough for your tiny figure to move through, opening on to clearings where the damned (no, not the band) are having their heads sawn in two or being stretched on racks. Triple Six are obviously aiming for some press notoriety!

While it's not quite the 'nasty' they claim, it's graphically gory and gruesome and your battle against the forces of darkness, only defeated by the crucilixes you throw, is fairly addictive.

I'm sorry to say it's about a pound too expensive though.

John Minson



Ambience

Program Mordon's Quest Micro Amstrad Price £7.95 Supplier Melbourne House, Castle Yard House, Castle Yard, Richmond TW10 6TF.

ordon's Quest is intended by Melbourne House to be a sequel to the old Classic Adventure chestnut. It retains some of the major locations of the original but sets a new task - to retrieve the mussing bits of Mordon the Ancient One's immortality machine.

True to the original, this is a text adventure pure and simple, the puzzles are difficult and the only concession to graphic effects are the multicoloured division of description, input, objects owned and so on.

There are 150 locations and the descriptions are rich and evocative. The opening section is that mysterious old house featured in the Classic Adventure. The vocabulary of 500 words is enough to ensure that you can spend a very, very long time indeed puzzling over what to do next.

Text analysis is relatively simple, being restricted for the most part to two words: phrases like Go South. Score tells you how you are doing.

Later in the game the blurb promises 'a fantastic future world with perspex domes, flashing lights and ambient music'. It adds deadpan: 'it's wery mysterious' - it certainly is. What the ancient eives of Tharg are going to make of ambient music. I know not.

Graham Taylor





SCAROTE ATA

BOUND AND MUSIC

SOFTWARE

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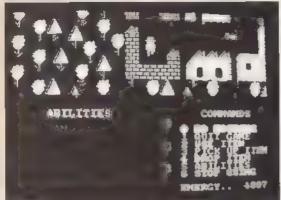
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Software Reviews



Hot graphics

Program The Captive Micro Commodore 64 Price £1.99 Supplier Mastertronic, Park horne, Park Rd, London NW8

nwittingly, you have wandered deep into the Glen of the Coloured Corpses. You find yourself in the streets of a village set in a landscape which is surrounded by a dense lorest. Now the trouble really starts in The Captive.

The game action is displayed in a window covering most of the top half of the screen. As your joystick-controlled adventurer moves, the landscape scrolls around him. While exploring, he will come across various strange items and buildings. By pressing the fire-button you can access a menu which allows your hero to pick up, drop and use items. Careful

planning is needed, though, as he can only carry three objects at once. He will also have to avoid the deadly plague carriers. They pop up all over the place, and contact with them means sudden death.

It's obvious that to escape you need to work out how to use the many items which are scattered about the place. For example, if you've found the blue scroll and a typewriter, you can type your name on the scroll and it miraculously becomes a fiving licence!

The way the computer handles all this with the joystick meally quite neat. The graphics are also pretty hot, with a good screen-display. Gamesplay is definitely for those who enjoy adventure-type puzzles, but it's easy to get into and fairly addictive. Mind you, I really hate those plaque carriers!

Tom Hossey



Program Monopoly Price £9.95 Micro Spectrum 48K Supplier Leisure Genius, 3 Montagu Row, London WIH 1AB.

t last an official version of this classic board game from a company which has specialised in such conversions. At least two previous (unofficial) versions have existed but were criticised because one only showed you part of the board providing no overview while the other revealed the whole board in such they detail it was difficult to tell what was going on.

Leisure Genius has solved this problem with a perspective board view upscreen and below it the strip of properties following the player's current position. A lot of care has been taken with the 'feel' of the game; when the dice are thrown you see them roll and better still, when property is auchoned not only does a hammer descend with a band but the dice jump as it lands. Player messages appear in the centre of the board and once you're used to looking sensible there it's arrangement.

The program provides a complete and standard game, the computer playing any of six players, and its strategies seem strong. The documentation on the program could be better and several points may



prove confusing or result in crashes until you've played a couple of times. I also found the absence of all those little cards and banknotes removed some of the fun, and in helps to know how the property is grouped in the real board.

However, though I consider Monopoly primarily a social game, I'm sure budding property developers will be delighted now they can get their fix of capitalism any hour of the day or night.

John Minson



Bat or Bowl

Program Graham Gooch's Test Cricket Price £7.85 Micro Commodore 64 Supplier Audiogenic, PO Box 86, Reading, Berkshire

here are several cricket simulations around for the Commodore 64.
One of the better ones is Graham Gooch's Test Cricket.

It's better because graphically it's fairly sophisticated, with large well animated sprites instead of the usual matchstick men.

You can choose your own teams and either bat or bowl there is an ingenious use of the joystick to give you quite a wide range of both bowling and batting options. It is possible, for example, to play either agressively (with its attendant dangers) or defensively if the score looks in your favour.

When in bat the fire button determines the timing of each stroke - it requires a good deal of skill not to give away an easy catch or, worse still, witness the wicket crumbling behind you.

If you want a cricket simulation - and it is the right time of the year - then so far this is the one to go for.

Graham Taylor



Addictive

Program The Wild Bunch Micro Amstrad Price £2.50 Supplier Firebird Software, Wellington House, Upper St. Martin's Lane, London, WC2H 9DL.

ne of the rising stars of Firebird's silver catalogue is without doubt The Wild Bunch. It's a simple, well implemented, idea that, although not a classic, clicks into an engrossing and addictive game - just what a cheapie should be.

Whilst billed as a 'wildwest adventure' it relies more on strategy elements than a con-

ventional adventure. You are presented with the scene where you are, wrongly, accused of murder. Whilst pursued by the Pinkerton Agency you must identify and capture the member of the wild bunch who did the foul deed. This involves travelling to various towns where you can challenge strangers to a gunfight. Various facial characteristics relate the figures to wanted posters on show in the sheriffs office and part of the strategy element relies on keeping tabs on, and identifying, the correct one. Picking the innocent town mayor for a ahoot out does little to raise your social standing. The telegraph office also provides valuable information on the whereabouts of the bunch and of the Pinkertons.

Several towns need to be visited in order solve the problem - travel and sustanance both need money and the best way to boost this is in the poker games of the saloon, if you can avoid getting too involved with the firewater.

It is predominantly menu driven, the graphics are effective additions to the game, the shoot outs are particularly good, and both these, the wanted posters and the poker cards actually contribute to the game, which is a welcome

Tony Kendle

Software Reviews

One-Key

Program The RefOL Database Price (see below) Micro OL Supplier WD Software, Hilltop, St. Mary, Jersey, Channel Islands.

he ReIQL database is a file of data to be used in conjunction with Pion's Archive—note, Version 2. If won't with Version 1. The tape also contains a little program to be booted in before the main data, and this program acts as If "front panel", aiding in the retrieval of the data by the user.

The main facility that this program offers the user is 'one-key' commands. As you know. Archive requires the user to type in commands such as, Find, Order, Search, Next. Continue and so on. M full, which can be rather dresome when a large database is being used. All one has to do with WD's routine is to press the first letter of the command, thus F for Find, N for Next. You can use this program with your own files, thus making life a lot easier (but, you could also write a similar program yourself in half an hour).

The main program is a database of references to the OL in British magrazines, including the house journal of the QL User Group. As such it's a pretty helty piece of work - the database is now in its third update and currently contains 500 records. Of course, this is very handy to you if you want to track down an article on, say, QDOS that would be extremely useful if only you could remember where it was published! You can, though, be rather more curning or sophisticated than this, using the data, for example, to find out the best magazine to send review copies of your latest Jet Set Willy killer. or which author appears to be an expert in a certain field. It would be perfectly possible for you to update the records yourself, but WD offer to do the updating for you (supply you with the latest version) for the differences in price plus postage

Although there was some corruption evident on my copy, with many of the records displaying as a meaningless jumble of graphics and half-words (I assume this is not a normal case), and although some of the onscreen prompts get permanently overwritten by system messages, nevertheless the package is good value, if only because it will save an awful lot of typing.

WD maintains a unique price structure, allowing the purchaser to "mix 'n' match" programs, paying a "medium" charge plus a charge for each program recorded on the medium, so see WD advertisements for details or contact them direct.

Tony Bridge



Topical

Program On-Court Tennis Price £10.99 Micro Commodore 64 Supplier Activision UK Inc., 15 Harley House, Marylebone Road, Regents Park, London NWL SHE

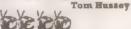
ith Wimbledon capturing the interest of aports fans everywhere. Activision have chosen a good time for the release of their simulation, On-Court Tennis. Do you fancy a game against John, Bjorn, Jimmy or Ivan? Each of these players have their strong and weak points, so it's important to choose your opponent with care. It la also possible to select which type of court play on - grass (fast), hard court or clay (slow).

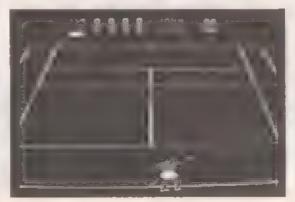
The couri is displayed as if you were aiting in the commentary box behind the server, with the graphics big and clear. No ball-boys, umpires, touch-judges, photographers or crowd to clutter up the screen here.

The first thing you have to master is how to serve. The player automatically throws the ball up, and you have to time your swing and direct the stroke. Quite tricky (just like real tennis!). During the rallies, the computer positions your player in the correct place to make a shot. Then you actually make the shot by one waggle of the joystick drop shots, slice shots, flat shots, top-spin shots or even lobs are possible.

Timing is crucial as the timing of your swing determines in which of the 16 directions (angles) the shot can travel. When the computer or your human opponent tries a lob shot, you automatically go into a special "smash-mode". This enables you to overhead smash the ball into any part of your opponent's court. Smashing the ball into the corner leaving the computer stranded is just great! It looks really impressive, too.

The computer also boasts something called "floating intelligence" – as you get better, so does the machine. Can't be bad – but it's the great control you have over the shots that really makes the game. A good buy – even professional tennis players will enjoy this game.





Un-English

Program On-Field Football
Price £10.99 Micro Commodore Supplier Activision
UK Inc., 18 Harley House,
Marylebone Road, Regents
Park, London NW1 SHE.

porting simulations seem to be all the rage at the moment. Programs on Basketball, Squash, Baseball, Boxing and Cricket are pouring from every door of the software houses. Now, Activision is getting in on the act with a number of titles.

As you might guess On-Field Football isn't about good old British soccer, but the American equivalent. I shan't begin to go into the complex rules, but suffice to say that it's vaguely similar to Rugby, with forward passing. The program allows you to take on the computer or a human opponent (if you've got an extra joystick). After juggling through a few menus and choosing your team, play begins.

The action starts with the customary kick-off. Instead of the usual 11 players (from a total squad of 49), you only control four, but this is about all you can manage. Before each play, the team huddles, and you have to choose your attack plan. This involves selecting the formation and the running patterns of wide receivers, tight ends, etc - all within 30 seconds. When on defence, you must choose your pass coverage and rushing plays. Eventually, the actual play starts and you are able to try out your attack plans.

The so-called player perspective graphics aren't exactly spectacular, but they are adequate. The game-play realistically covers most aspects of American Football: time-outs, substitutions, field goals - it's all there.

Being a Channel 4 American Football fan, I was just about able to cope, but a novice would probably find the comprehensive instructions and game-play very bewildering, Still, I've always wanted to be a quarter-back.

Tom Hussey



Jumbling along

A sliding block puzzle to while away those hours between programming for the QL by R Forsey

his is an adaptation of the well known sliding block pocket puzzle. In this version the computer draws a picture on the screen and then jumbles it up: all you have m do is to restore the jumbled up picture to its original state.

To restore the picture you have a cursor. This is moved around the screen using the arrow keys. To move a piece into the black space, the cursor must be placed on the piece you wish to move. Then press the space bar and the piece will move into the black space.

There are two other keys that can be used; Enter, which will move the puzzle five times randomly, and Escape, which will finish the game.

Proc Start - sets up the variables and screen layout. If then acts as the control

procedure for the program.

Proc fumble - jumbles up the pieces. It is called with a parameter Num. This tells the procedure how many times to move the pieces. It works by generating random numbers which are interpreted in the Select On routine. This determines if a piece is moved left, right, up or down. Proc Selr - finds the pixel y coordinate for the scrolling window.

Proc Sely - works very similarly to Jumble, but instead of using random numbers it takes them from the user.

Scrl, Scrr, Scru, Scrd - each procedure checks if the conditions are correct to scroll, then calls Selx and Sely. Creates a window II in the correct position, and then scrolls. Increments variable MO (moves) by 1. Sets new position for black space.

Proc Curs - this contains the main loop which reads the procedures Temp and Slide.

Proc Drawpic - this contains the main loop which reads the keyboard and moves the cursor.

Proc Slide - draws the word SLIDER and can be called with parameters XI and YI, which give the coordinates for the beginning of the word.

Proc Temp - draws the temple using procedures Box and Roo.

Proc Roo - draws the rool of the tample.

Proc Box - draws a box with X,Y for the coordinates and X1,YI for length and height.

Proc Fin - the finishing routine. Tells you how many moves you had and asks if you want another go.



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2180 70 0:FILL 0:801 75.90.100.50
940 DM 1=M1-8
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760 END SELECT
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970 SELBET ON 1
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7220 NEXT 9
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1000 ON YMY-5
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1150 ROHRON
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1160 DO DEFINE
                                                                                                            2426 LINE 1+11-Y-Y1 TO 1-Y-Y1
1200 DEFine #900cedure 5089
                                                                                                           2410 LINE EVENTS TO THE
1210 IF WYY SELT SELVICES BO
                                                            DEF 1811
                                                                                                           2450 DO DEFINE
1229 YEADGHOS, 250, 50, 400, 170
                                                                                                           2500 DEFINE #EDIcation FTM
2510 MDCON 300-46-100-20
1230 FUR F=1 TO 50:POYM5, 2:NEXT F
1240 MT=X:NY=Y
```

Direct commands and no nonsense

Got a bug in the works? Try this Trace routine from the keyboard of Howard Allen

his is a machine code program for the Spectrum which when used with a Basic program will display the line and statement number currently being executed in the top right corner of the screen. This is obviously of use when debugging and developing programs.

The code should be placed in memory at address 50401 after a Clear 50400 command. Il is activated by Randomize Her 50401 and deactivated by Randomize Usr 50410. When a Basic program 5 then Run, the line and statement numbers are displayed as explained, and also the program is slowed down, making it easy to follow. If the program is slowed down too much then this can be altered by Poking a number of between 1 and 258 at address 50570. The larger the number then the longer the delay except for 0 which gives the longest delay.

It should be noted that if a Break is made into the program then the line and statement number displayed will be nonsense. To correct this and also to return to the normal operating speed, enter a direct command (eq List), and the Trace will temporarily stop (until the program is next Run again). This is because Trace is designed only to work when a program is actually running.

The principle on which Trace works is quite straightforward. The line number currently being executed is held in a System Variable called PPC (23821) and the statement number in one called Subppc (23623). It is therefore a question of reading these and displaying the result. in order to achieve this the interrupt mode of the Z80 has been utilised.

The Z80 has three kinds of interrupt: IMD which cannot be used on the Spectrum. IMI which is the normal operating mode and IM2 which can usefully be used by programmers. There is also a non-maskable interrupt but this has been deliberately blocked in the Spectrum Rom. When in the normal interrupt mode to IMI, and an interrupt occurs, control is transferred to address \$6 (38H) in the Spectrum Rom. This contains the Rom routine which updates the clock and reads the keyboard. On exit, control is transferred back to the exact place that the interrupt occurred. These interrupts occur at the rate of fifty per second.

The interrupt mode that Trace uses IM2 (interrupt mode 2). In this mode an address is formed from two bytes: the low byte is supplied by the hardware that caused the interrupt, in this case the Sinclair ULA which by default supplies 258 (FFH) and the high byte from the I register, a register supplied on the Z80 for this purpose. The value of the byte supplied by the I register can be altered by the programmer but for technical reasons it cannot hold between 64 (40H) and 127 (7FH). The value that it normally holds is 63 (3FH). An inspection of the address so formed is made and a jump made to the address that it holds. This is known as a vectored address. This method has been adopted to give flexibility. When different peripheral devices are attached, they supply a different byte to

each other and to 255 so the Z80 can differentiate between them. A table of vectored addresses can be built up to direct the interrupts.

The byte supplied by I in Trace is 196 (C4H) so the full address is 50431 (C4FFH). This address must hold the address to which control is now transferred and it is 80433 (C50IH) which is the start of the Trace code. It is also the next byte after the vectored address which is convenient. A clever idea is to find an address in Rom which is xxFF (where xx is a suitable value in I) which holds a number which is an address in Ram where an interrupt routine is held.

When using an interrupt in this manner all registers have to be saved then restored at the end of the routine; this is not done automatically as when using Randomize xxxx. The exit from Trace is via Mark-int so that the clock is updated and the keyboard is read.

It is important to note that the byte supplied by the Sinclair ULA may not be 255 if a peripheral device is attached, and that vectored addresses in Rom should be avoided with Interface 1 added because occasionally the vectored address is taken from the Shaddow Rom. causing a crash.

it should be possible to use Rom routines in programs using interrupts if all registers are saved then restored afterwards; in practice i have found it easier to make Trace self contained, which is why all the division and printing is done from within the program.

```
10 CLEAR 50480
20 LET ADDRESS_S0481
20 FOR :=1 TO 23
40 LET CHECK =0
50 FOR :=1 TO 10
50 FOR :=1 TO 10
50 READ 2: POKE ADDRESS_2
100 READ 3: CHECK THEN PRINT "ef"
110 READ READ 3: CHECK THEN PRINT "ef"
111 PRINT AT 0,0; "line "; i*18+9
112 PRINT "rewind tape to VERIF 7,229,285,177,129,251,27,17,28,64,285,173,19
140 VERIFY "CODE 150 PRINT "ef"
150 PRINT "CODE 150 PRINT "Eff 150 PRINT "E
```

Just your type

The concluding part of this printer utility for the QL written by Dr A'K Lowry

his week, the concluding part of running, you will be presented with a

and so on, without going through the usual painstaking routine.

At the moment, the program is set up for the Canon PW-1080A, but it shouldn't the SuperBasic listing which we number of menus which should allow be too difficult to customise the listing to

```
started last week. As il stands, on you to choose typefaces, character sets
                THITTENLESS WEEK, AS IN STANTIS, ON YOU TO CHOOSE 1500 AT YOU, YOU FRITTY FILLS." JSJ: COMPONENT FILLS. ". 1911 COMPONENT FILLS." JSJ: COMPONENT FOR THE STANTIS AT YOU. COLI PRINTY 1 - FRANCE 6 - LINLY "I FOWN-FOWL 1 LEGAL AT YOU. COLI PRINTY 2 - ORYMIND 7 - SDAIN "I FOWN-FOWL 1 LEGAL AT YOU. COLI PRINTY 5 - UN B - JABAN "I FOWN-FOWL 1 LEGAL AT YOU. COLI PRINTY FILLS." 2.99 1 LEGAL AT YOU. COLI PRINTY FILLS." 2.99 1 LEGAL AT YOU. COLI PRINTY FILLS. ". 299 1 LEGAL AT LOW COLI PRINTY FILLS." 2.99 1 LEGAL AT LOW COLI PRINTY FILLS. ". 299 1 LEGAL AT LOW COLI PRINTY FILLS." 2.99 1 LEGAL AT LOW COLI PRINTY FILLS. ". 299 1 LEGAL AT LOW COLI PRINTY FILLS." 2.99 1 LEGAL AT LOW COLI PRINTY FILLS. ". 299 1 LEGAL AT LOW COLIN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLIN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLIN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLIN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLIN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLIN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLIN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW COLUMN PRINTY FILLS. ". 299 1 LEGAL AT LOW CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2390 MWG DEFine
1600 CLE intvaley TKEN FRIETS. CERGIST: "M'.CERGISTUME!

1600 CLE AT 8. C.PERSTTISS. CHRESTS!

1700 IF yearnst-my TREE PRIETS. CHRESTS!

1700 IF yearnst-my TREE PRIETS. CHRESTS!

1710 INU DEFine

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1740 REMark se Factore an integer within a predefimed

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1750 REMark se Factore and integer within a predefimed

1750 REMARK se Factore from the acytocard

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1750 REMARK se Factore intva

1750 REMARK se Factore intra 
1850 REPART sead_lays

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$250 at row, och fright fills(" ",29) rowerder!
$250 at row, och fright fills(" ",29) rowerder!
$750 and f unitel Tabs |
$710 chars = "C" at the fill the fil
                3070 CLB

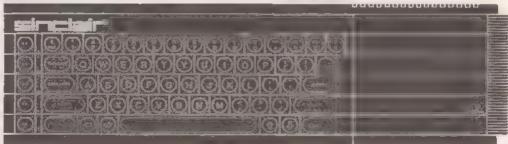
30F0 A7 7.2 PFMIRT*Enfor tab stops as column numbers*

30F0 A7 7.2 PFMIRT*En increasing order. Mamamber to*

3310 A7 6.2 PFMIRT*Enke charative size into eccount **

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3310 A7 6.2 This country is the charative size of the characity of the ch
            Figure Printegram 18.5: PRINTERIAE valve for n (0-25):"
4530 CLEAT B.5: PRINTERIAE valve for n (0-25):"
4530 PRINTES. CHR6(27):"3": Chr6(intremai(0,25)):
4530 b5
2560 CLEAT 6.5: PRINTERIAE value for n (0-17):"
7370 PRINTES, CHR6(27): "4": ChR6: Intremai(0,127)):
7350 END NELect
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sigo FRATES; CHREE LANS
Sigo REAT 1
Sigo PRENTES; CHREG [O];
Sigo Exit Loop
```



Computer as canvas

Create a work of art on the Amstrad machines with this program by R Mitchell

he following programme will enable people to use the Amstrad as a canvas, to draw and paint pictures on.

There are 16 colours in mode 0. One of these is the paper colour; you will be able to use the other 15 of these to paint with. I've chosen white for the paper, colour number 13, which comes out more like a light grey. The pen that I've used for this is Pen 0. This colour can be altered from within the program quite easily any time and the border will change to the same colour.

When you run the program you will see the 15 colours along the top, and underneath are the 8 shapes you can use. To get access to these shapes you have to use the numeric keypad on the right hand side. Keys 0 to 7 are the keys required. By pressing the corresponding key the shape will appear in the top right hand corner of the screen.

Cursors - these move the cursor on the screen in the direction that the arrows point.

Shape 0 - This is just a single plot. If you want

to draw a shape with this, press the D key to draw and a face will appear in the top left hand corner. This is to let you know that you are drawing. To move the cursor without drawing press the M key and the face will disappear. M means move. Use the cursor keys to move.

Shape 1 - This is a wide band and you control it with the same keys as shove. It's best used with the Shift key down, then press the cursor

Shape 2 - This plots at random on a 8*8 area; again it's best used with the Shift key down. If you press the R key you will get the date printed in a random colour. Sprints them in a single colour.

Shape 3 - This draws a line between two points. If you position the cursor when you want the line to start from, press the I on the main keyboard and then move the cursor to where you want the line to finish and press the 2 on the main keyboard.

Shape 4 - This draws a box. Position the cursor at the bottom left and press the I on the main keyboard then position the cursor at top right and press the 2on the main keyboard.

Shape 5 - This draws a solid box. Use the name as above.

Shape 6 - This will draw a circle. Position the cursor where you want the centre of the circle to be and press / on the main keyboard. Now move the cursor to where the outside of the circle is to be drawn and press 2 on the main keyboard.

Shape I - This draws a triangle. This is the only shape you have to set three points, using the 1, 2, 3 on the main keyboard.

F - Position the cursor in the middle of what shape it is you want to fill, then press the F key.

To Change Colour - Press the spacebar and the first colour will start flashing. Move along the colours using the left and right cursor keys; when you have the colour that you wish to use, press the copy key.

To Change Pallet - To alter the colours of the pallet, first press the spacebar then press the E key. You will now see a number appear in the top right hand corner. This should be 13 if you are using this control for the first time. If you press the up and down cursors the number will change and the paper and border colours will be the same as the colour number. This is because you are altering the colour of pen 0. This is the pen that I've used for the paper. To move along the pallet press the left and right cursor keys and then alter the colours by pressing the up and down cursor keys. Press Copy when you have finished and you will return to the main routine with your new colours intact.

```
10 REM TERRESERVES TATES OF STREET
                     APTIST
                   R. MITCHELL
50 REN 0
    REM *****************
188 REM EXPERIES SET UP SHAPES 411-444
128 SYMBOL 240,0,0,0,0,0,0,0,0,0,0,1
138 SYMBOL 241,1,0,0,0,0,0,0,0,0,1
148 SYMBOL 242,0,0,0,0,0,0,0,7,7,7
158 SYMBOL 243.7,7.0.9,0.8.6.6.9
168 SYMBOL 244.36.58.3.48.230.150.36.39
178 SYMBOL 245.47.25.206.205.139.150.200
218 SYMBOL 249, 129, 129, 129, 129, 129, 129, 1
228 SYMBOL 258.255.255.255.255.255.255.2 618
 230 SYMBOL 251,255,255,255,255,255,255,2
 249 SYMBOL 252, 24, 36, 182, 66, 66, 195, 129, 1
 258 SYMBOL 253,129,129,195,66,66,182,36.
 260 SYMBOL 254,128,192,168,144,135,132,1698
 278 SYMBOL 255,129,138,132,136,144,168,1788 IF INNEY 38 >=8 THEN PRINT ENRICE? >>
 280 REM ERRERRERRERRERRERRERRERRERRERRER
 298 REM TERRET SET UP INK COLOURS TERE
380 REM TERRETERES TERESCONDENS TRANS
 318 FOR ax=8 TO 15 READ clx tk(ax)=clx(1 sx=8 738 IF IM Ax, 1k ax) HEXT 328 DATA 13.8.2.5.28.26.16.15.8.6.3.12.9 COSUB 1680
 .21.19.24
338 MODE 0: 42=170 x2=320 c2=1 Max=22 max shapet=0
750 IF INKEY(13)2=0 IHEN PRINT CHR#(7).
 348 Pt%=8 m%=1 DEG
 350 REM REMERENTAL DUT INK COLOURS DER
360 REM EXERTIFICATION OUT INK COLOURS DER
370 REM EXELULIEREN EXECUTION OF THE
  388 FOR ax=1 TO 15 PEH 4%
```

```
390 LOCATE 48+2,1 PRINT CHR$(140),
400 LOCATE $4+2,2 PRINT CHR$(131), NEXT
410 ORIGIN 0,330 DRHWR 0.68,1 DRHWR 638.
                -48 EKHMA -638'6
420 PLOT 554.0 DPHNE 8.68
      448 REN 11111 DNHH OUT SHIPES 121111
450 FEM 121121111111111111111111111
450 shape/w8
470 ORIGIN H.8.8.640 328,8
490 PEH C. FOR AXOB TO 14 STEP 2
490 LCCRIE AXOB TO 14 STEP 2
500 LCCRIE AXOB TO 14 STEP 2
500 LCCRIE AXOB A PRINT CHES 240-AX).
 SZO REM TELETE KEYBORRO 121441221144
530 REM ARRESTEDERSTEDERSTEDEN
       REM SERESEESESSESSESSESSESSESSES
  SO LOCATE 19.2 PRINT CLETE 288+5hDeVIZ
(LOCATE 19.3 PRINT CLETE 29145hDeVIZ 17
770 IF IMPERENDED THEM NOVE 454
30 IF IMPERENDED THEM NOVE 29145hDeVIZ 17
            THERVEN BY THEN THE THE THE
             INKEY(1)=32 THER 1, 1,410
INKEY(0)=128 THER 4 (4) 4 (4)
             HREW 80=120 THEN AND 1-50
INCENTION (HER AND 1-50
             INVEYOR HER PRINT CHPS(7)
        IF
 deles
710 IF INKEY 50 DER THEN PRINT CHRSC? ).
 128 IF THREY 68 DEM THEN PRINT CHRECTY
             INKEY(53))=8 THEN PRINT CHRSC?),
             INKEY(15) =0 THEN PRINT CHRS(7),
                                                                     0.3000
1850 IF drift RMC ship-ket then for fyish
55-4 to 55-4 for fixther-d to x4+4 Plot f
55, fyi, cx hext next Goto 1888
1860 IF drivet RMC ship-samb then Plot XX.
 shapet=1
        IF THREY(14)>=0 THEN PRINT CHRS(7).
            -2 9%.c% GOTO 1886
IPMEY(3)>=8 THEN PRINT CHRK?>>>51078 IF dr%=8 THEN PLOT XX,9%.cZ%.PLOT >
```

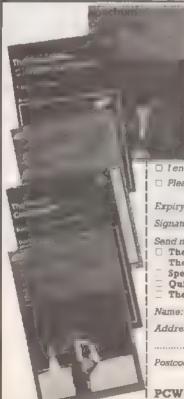
```
788 IF INKEY(28) =8 THEN PRINT CHRS(7),
ShipeRed
790 IF THREYCLEDD=0 THEN PRINT CHR#C7011
           INKEYC433HB THEN PRINT CHRUCTOLS
             THREYCLOSS THEN PRINT CHRICTS
             VACE THEN YER
820 IF VXC2 THEM YX*2
830 IF VXX36 THEM XX*36
830 IF VXX36X THEM XX=6
830 IF XXX534 THEM XX=6
860 IF SHXP&XX THEM MCX=8
870 IF MCX=1 THEM MCX=8
870 IF MCX=1 THEM MCX=12,3 PRINT CHRMM
888 IF dra=8 THEN LUCRTE 2.3 PRINT" ".
898 IF INCEY(47))=8 THEN PRINT CHROK 7) C
       1130
            INKEYC64 DOES AND SHAPP#202 THEN PR
900 IF INKEY(64):00 HMW STAPPS/2 THEN FA
INT CHREAT?), POINTE ME GOTO 1270
918 IF INKEY(65):00 AND STAPPS/2 THEN PR
INT CHREAT?)::POINTE/E2/COTO 1270
920 IF INKEY(57)::POINTE/E3/COTO 1270
INT CHREAT?)::POINTE/E3/COTO 1270
       REM RESERVERSERENTERS TERRESPORT
 GEH REM SASSAS PEEL AT
        REM ENSTREALERS STATES STREET
 960 c1%=TEST(x2.9%)
 979 c2%=c1%+4
 1988 REM INITERS DRAW THE LINES ASSAULTS
  920 IF mxx=xx BND maxaxx IHEN PLOT xx.y
x.c2x FOR de=0 TO 100 HEXT PLOT xx.yx.c)
    GOTO 1989
  1938 IF dr%=1 RMD share%=2 RMD s%=8 FMEN
FOR IX=1 IO 6:51%=RMX 1 816=8:52%=RNDX 1
DR16=8:PLOY xX+s18.544+2%; C%:MENT GOTO 1
 1040 IF drive1 AND shapake2 AND sket THEN
FOR ikel WW 6-510mRNDK1)*14-7 szkeRNDk1
)*16-8 PCOT xk+sik,yk+szk.*1k+7 NEXI-GOT
```

1788 FOR FakeamA TO & STEP-2 1798 16 TEST(fake, place) THEN NEXT ELS 1888 max=x% m9%=4% 1898 GOTO 568 1448 REM ###### SOLID BOX ####### 1450 REM ***************** 1130 ak=1 1130 19k 2% ik(a%), 2k(0) SPEED 19K 18,18 1150 FOR de=1 TO 150 HEXT 1160 INK a%, ik(a%) REM CIRCLE 1838 IF -c1c%=c1% THEN P19%=P19%-2 G070 1 1170 IF INKEY(1)>=0 THEN PRINT CHRS(7): 1180 IF INKEY(B))=0 THEN PRINT CHRK(7); 1230 GOTO 1480

1240 REM INTERESTITATION THE SHOPE FIRST

1250 REM INTERESTITATION THE FIRST REM INTERESTITATION THE SHOPE FIRST

1250 REM INTERESTITATION T 1318



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Less manual labour

A utility for all 1541 owners – an error reader for the CBM 64 by **D K Amos**

his program is for Commodore 64 users with 1541 disc drives. It allows the user to read error measages from the drive's error channel, and also clear it, without having to type in the program given in the 1541 manual.

It is run in the direct mode using 'Sys 82992'. An example of the display produced is: Error 67, filegal System T or S Track 18, Sector 00

The disc drive error channel will also be cleared, and this will be shown by the red indicator on the front of the unit againg off.

Note that if the routine a called from within a Basic program, the program will

terminate without an error after the rou-

Once installed in memory, using the Basic loader shown, it will not be affected by 'New' or even 'Sys 64738', so it is recommended that the routine be loaded in to the computer on power up.

Assembler listing

TRUE CERR	est# eu			1520 CF6C C992	(J19) 11.3 (Q.	
010 (600 8	EREEN	= 34400		1930 CF68 F00B	14.9 (68.1	· GOIO FIRST SEPERATOR
date of the refer		LDF M#DD	FRINT RETURN CHE	1540 CF78 . 491	CMe billing	
CHAIR FRANCESCOPE		JSM FRICHE		an harmon of the market	TEN GERR	ODTO SECOND SEPERMIN
848 CF-05 BUNK		LTH MAGE	FILE MARIBES + 15	1560 - 174 - 47 5	[tes 8 , 17,14	FOURTH SEPERATOR
DOME DE DE PROPERTY		LCA DEGG	DEALCE MENTER P 9	1500 Fib. Hills	LEC = 7141 k	
USA CERT BOOK		EDV HIDE	CHRIMEL W 48 5 515	[中国] F. C. D. 干量6年	386 G-1157	PRINT "-SECTOR
oro crot went b		FIR LEDET	SAVE FILE DETRILS	ISLAN FIG. AHEA SER		
ноен экстронов		F194 #100	HIN FILE WAVE ASSAULT	Telephore Discours	() a 15T1	
1990 UF IN HOLE		STA 487		16198 FOR 4 PT F	090 1 U [1] I	FREEHAL TERROR
1920 UF12 254965		108 GREHE	OPEN FILE	THE WALL OF THE SEPTEMBER		
110 CF15 GOLF		BULL: ERIRORI	FILE RUREADY OFEN	THE FEE WARF	LE Block	
1128 CHILL HELD		EB #B8	- EMECUEA REALCE HINDER	\$640 13.5 4.00 F	484 -F1 CA1	1 PR1(55 ", "
1130 CF18 3615		51. 410		the same of the second		
140 (FIB 201EE)		3 NF 1 HEFT	· PMENHKE DEVICE	CONTRACTOR OF THE PARTY OF THE	1 221 4 7 12	+ PRODE R "1800L"
1150 CRIE ROLL		Line #0.20	STRRY OF IMPUT RUFFER		7.01 JBR 475	PRINT SEPERATOR
LIGHT OFFICE THEFTON		+ DR SWIGHT		SECTION AND SERVER	517 \$1E	
1170 Mas 20190F		JUNE HETHIR	FERRUPY INPUTE	Server of the entropy	, 54, 4 (184	SET POINTER
LIMIT CHANGE OF THE RES		JUNE PROJECT	· PRINT FOR ALL WARREN	1204 (Fee 3140) 108	My Little States &	• GET CHRENCTER
FIND (FED DOM:		films Ifich	1 081 TUE NUMBER	To Delice of State Control	· MF 28-91	
COMM THERE EASTER A SECUL		JIROLL REL	COME FILE	Editor Participation	LLL LIFT "	END OF STRING
(210 KERS BOWN		LIM BUILD	PRITE RETURN CHO	1208 - 120 201682	156 46 10,69	PRINT CHARACTER
1200 UP 30 ANISE?		TOP CRICHP		E. Mr. Service	1277	
1238 (Ea. 4 Amil)		THE RENDY	PETURNI TO DASIC	1750 3 35 BWF4	2.6 (1092)	GET MEM CHP
1240 CFBS 4CFBER	EFROR	THE VERLEN	* FILE UPEN ERROR		CIXT FUE	HESTORE REGISTERS
	PRISTE	CDH WING	1 SET STRING START	The peak In	FLH	
1266 0000 6000		Life BERRY		THE BEET RO	TRY	
120 H 1 F 3 H 3 1 F C		\$10 1FC		ESTA FAIR NE	6-1-4	
1280 / FOR SAFE		STR TER		TORROR OF HIS 1897	184	
\$290 Chart 8500		3TH #02	POINTER TO SEPERATOR	told take es	14.4	
1000 0141 JOSENE		JULY PRINCE	1 PRINT 1ST SEPERATOR	LESS CERT PLS	F15	RETURN
	LOOPE	Limi schaly		TOLY THE LOLDER PER		RESET 1/0 VEUTUE
13428 r E48 E017		BED ENDERN	END OF STRING	THE REST PRINTED	1.39 #600	DEVICE - SCREEN
1328 CF4H 0.000		CHE BEST.	I FRINT SEVERITOR	Legal Color #11	5T6 #13	12111
1 3411 (.64), 36(0)8		206, 100, UBA	F FEIRE 16 1 1 46	LEGIT LEWIS CLUMPS	1MP 18474	· RETURN TO BASI
1350 CF4E 0692		2141 1403	* KIND LEFERRILE	TONGER AND THE		
Land I Flat About F		TOP TRITIES	A BRIDE SERENATION	14:31 17 15 15	First TV9	
1 378 CESS 405RCE		F184 - 12 H1999-	DON'T PRINT COTER	1894 CFF LUST IX		
1300 CHSC 201617	FIGURE SPINS	258 4831 HB	PRINT - CW	1959 J. E. 600	871 400	
	UPNH	100, 11.1	FIRD NEXT CHR	1900 FEW 90 1.		
THUS UPSE DOOR		SHE LOOKS		19 DO LEET 45 ALLEY	TO UN TH	ACK T
1410 (Fig. Earl)		190 JEL		17 4 801 09	BYT THE	
1400 CESS DOES		RELEGIES THE REST		1944 175 111955 11		108 -
14-bit Chall old	ENDSTR	RTS	HO ROSE CHRS	195 A DALE DO	1.4T 1.40	
1448 CF62 48	PRISEP	PHA	PRESERVE PEGISTERS		IN - ILLU	
1450 CF60 88		TO A			CHE W SERVIN	
1460 UASA 48		PHA			SET - MELLIL	
1470 CE65 30		EVH			TOTAL BHREW	
1480 1466 48		PHH			1 MF = 1E716	
1430 1567 46		SISIE			0911 - 39291	
1500 CF68 H502		LD6 202			- 19)22 m 1131.40	
1510 CF68 F01D		ter SEPS	F GOTO THIRD SEPERATOR	2120 1011		

Basic program

```
10 C=0:FOR A=52992 TO 53198:READ B:POKE A.B:C≃C+B:NEXT
20 IF CO24977 THEN PRINT"ERROR !!"
1000 DATA 169,13 .32 .22 .231.169.15 .162,8 .160,15 .32 .0 .254,169.0
                          ,243,176,31 ,166,184,134,19 ,32 ,30 ,225,169,44
1010 DATA 133,183,32 ,74
                          ,249,171,32 ,57 ,207,165,184,32 ,155,242,169,13
1020 DATA 141,255,1
                      ,32
                                                        160,0
                                                                .,133,252,132
                          .166,207,76 ,249,224,169,2
1030 DATA 32 ,22 ,231,76
                     ,32 ,98 ,207,177,251,240,23 ,201,44 ,208,8
1040 BATH 251,133,2
1050 DATA 32 .98 .207.76 .89 .207.32 .22 .231.230.251.208.233.230.252.208
1060 DATA 229.96 .72 .138.72 .152.72 .8 .165.2 .240.29 .201.2 .240.11
1070 DATA 201.1 .240.14 .169.197.162.207.76 .141.207.169.176.162.207.76
1080 DATA 141,207,169,183,162,207,76 ,141,207,169,186,162,207,133,253,134
1090 DATA 254,160.0 ,177,253,201.0 ,240.6 ,32 ,22 ,231,200,208,244,40
1100 DATA 104,168,104,170,104,96 ,32 ,204,255,169,0 ,133,19 ,76 ,116,164
82, 84, 32, 87, 87, 81, 8, 32, 44, 8, 32, 28, 79, 28, 82, 84, 82
0, 32, 38, 67, 48, 79, 68, 68, 32, 44, 0, 32, 75, 76, 76, 65 BATA
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Almost as easy as ABC

A program that teaches alphabet and keyboard familiarity on the BBC . by Andrew Heptonstall

his program for the BBC model B tests children's knowledge of the alphabet, and gives experience of using the keyboard. Five options are available: 1) Alphabetical order against the clock, 2) Alphabetical order, 3) What letter is before/after, 4) Upper case, 5) Lower case.

Option One is a race against the clock: a bell sounds if the correct answer is entered, a noise sounds if the letter is incorrect. Option Two allows the alphabet to be typed in letter by letter. If the letter is correct, a space rocket flies up the screen and a tick appears. If the letter is incorrect, an ambulance crosses the screen accompanied by the appropriate sound effect. Option Three asks

what letter comes before/after a particular letter. Options Four and Five select upper and lower case characters: the program automatically switches on and off the caps and shift locks, so you do not need to select these.

I would suggest that an adult is present when a young child is using the program, to help when the child becomes stuck, and to show it what to do. I would also suggest that when using lower case, you should stick stickers on the keys.

Program Notes

Line Nos

40-180 Calls procedures. 170-260 Calls procedures

Calls procedures concerning level three

280-350 Calls procedures concerning

Procedures

Prochad

Procgood

Procinit Defines envelopes and characters.

Called if answer is incorrect:

draws ambulance.

Called if answer is correct;

draws space rocket.
Proclevels Seiects levels.
Procupper Sets upper case.
Proclower Sets lower case.

Proclawer Sets low Proclavell Level I.

Procheading Writes heading on screen.
Prochestime Gives time and number of

mistakos.

Proclevel2 Lovel II
Proclevel3 Lovel 3

```
LOREM....Olphabet Tutor....
  20REM...By A. Heptonstall....
  SUPROCEOUS
900Xx0
10070123;0202;01010;
1101F LXx1 THEN PROCYEVE11
1201F LXx2 THEN LEXX-1:008LB 280
1301F LXx3 THEN BORND 170
1401F LXx6 THEN BORND 170
PROCESSED FROM 7: PROLITERALLING
  ZOREPEAT
1901F PX=1 THENLEX-RND(23)*CX+1 ELSE LEX*RND(2A)*CX
210HDbE1: ADRIS2183031-010101
Assertions EMPLIS
230H0DE2: VDUZS:8202|0|030;
280IF 8884Y THEN PROCESSO ELSE FROCEAE
280UNTIL ASSEY
ZBOUNTIL FALSE
270:
280REPEAT
AYOPROCIEWELS

SOONDESCOUNTER

STOOTE ANNEY THEN PROCEDED ELSE PROCEDED

STOOTE ANNEY THEN LEXELEX*1

SOUNDESCOUNTER

STOORETURN

STOORETURN
45UDEEPROCBAR
 470VDU19,1,6,0,0,0,19,3,12,0,0,0
480SDUND1,1,136,80
 490CDLOURS
SOCFORTS-19 TOJ STEP-1
 DOGE LIFT AND THE TOTAL THE T
 SCONDUCE 449, $76: DRANT48, 64: MOVE 448, 64: DRAMT68, 576
$70: TMS 0: REPEATUNT IL TIME 4400
$80:ENDPROC
```

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ACCOPTER/IDCopped
       $10VDU19,1,4,0,0,0,19,3,9,0,0,0
   #300.CDB.EX
#609CDB01;7,0,40
#809CDRTY=1: TO! STEP-1
#80PERTITE-0;FEPERTER:11RE=16
#7071RE-0;FEPERTER:11.1RE=16
       AVOGCOLO, 3: MEVE 448. 192: DRAM640, D: DRAW1024, 512
7001 [MEMO: REPEATUNT 1L7: ME=300; CLB
710GNDPRQC
          7DODEFPROCIEVOLS
   740PHDCheading
750PRINT***CHR$130; Temat level do you mant ?"
750PRINT***CHR$130; Temat level do you mant ?"
750PRINT**TABC33:1. Alphabetical order against the
250Ms(st)**TABC33:1. Alphabetical noder**
750Ms(st)**TABC33:1. Alphabetical noder**
750Ms(st)**TABC33:1. Alphabetical noder**
800FR15**TABC35:1. Outer Case**
800FR15**TABC35:1. Lower Case**
800FR15**TABC35:1. Lower Case**
800FR15**TABC35:1. Alphabetical nodes**
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          RACOR DATE

RACOR 
                                                                                            ALCOHOL: 40 THEN OR CHARLES INT.
              920:
930DEFPR0Cupp #**
              9A0PRINTTABIS, 14); CHR4134; CHR4134
970PRINTTABIS, 14); CHR432; CHR432
LUMBERSHELLOWS

LATINGTO, TOTA

LOT DETAILS

LOT DETAILS
   10700EFPR0C1 ave11
       torous
1009@RDCheading
1100@RDCheading Typo in the alphabet, you will hear a
1100@RDCheading ball sound if you set the right latter
```

1130PRINTCHREISI; bor a "horrid" sound of you get it" 1150FORLEX=1 TO 26 1160REPSA1 1100KEPEA1
1700RINTTHDEG, E0; 20:048141; "Type taken: "INTETIME/100); " seconds."
1100PRINTTHDEG, E9; ED989441; "Time taken: "; INTETIME/100); " seconds."
1200FASC (B): - CX.-SLEX AND G8/2" THEN SOLKED; 4, IO; 10:14X-MC*;
1200FA ASC (B): - CX.-SLEX AND G8/2" THEN SOLKED; 4, IO; 10:14X-MC*;
1210WFII: ASC (G): - CX-LEX
1210F LEX/10 THEN PRINTTHDEGLEX: [2):58
1220FEX: 12X-11 THEN PRINTTHDEGLEX: 12):51; 14/194
1230FEX: 1 EX
1230FEX: 1 EX
1230FEX: 1 EX 1270F09R%-1 TO 3000FNEXT PX 12806KDPROD

| Nobels Prochagaing | ISTOPRINTED TO T | ISTOPRINTED TO T 1340NEXT HX 1350ENDPROC 13601

1370DEFFICIONNELLIM
130CFROLDENALLIM
139CPRIMT' CHRSTSIT' Inat time you took "; lix;" seconds,"
149CPRIMTDERSIS;" and made '; mistake(s)."
149CPRIMTCHRSTS(" and made '; mistake(s)."
149CPRIMTCHRSTS(" in to do it seter and better this."
149CPRIMTCHRSTS(", INS.) threes Shrots to try eden."
149CPRIMTCHRSTS(", INS.) threes Shrots to try eden."
149CPRIMTCHRSTS(").

1+700EFPR0Clevel2

1490IF MRT=1 THEN GOSUM :590:80TD 1260
1500PRINT: CHRESTS! Type in the next letter of the introductions 126; "Indoduct."
1510PRINTERS! THE PRINTERS (REP. 12): CHRESTRX+CX)
1550IF RX: IT THEN PRINTERS (RX: 12): CHRESTRX+CX)
1550NEYT

1570IF ASC(80) -CRONET THEN ANATH ELSE AS-TYT ICOOPRINT: CHRISTI Type in the first letter of the"
1600PRINT: CHRISTI Type in the first letter of the"
1610PRINT: GRISTI Siphebet."

IGAGPROCHESTING 1650FF PX=1 [HEM GOBUS 1670 ELSE BOSUB 1740 1660ENEPROC 171008-0614 17203F ASC(GB)(CLEX-1 HEN AB="N" ELSE AN="Y" 1730RETURN

(740REm...after)750PRINT''CHR9131; "What letter comes"[CHR8130; "after" 1750PRINT'' TAB (15); CHR9138; CHR9141; CHR81EX)770PRINTYAB(15); CHR9138; CHR9141; CHR8LEX 17808**0ET* 17808**0ET* 1800RETURN 1800RETURN

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Peek & Poke



Below the line

PRoberts of Hereford, writes:

I have a BBC Model B. When using the 32 line modes, they disappear at the bottom and the cursor is not visible at the top of the screen. I can make everything visible by using TV 255. Is it not possible to achieve a 32 line display using this without command?

A The loss of the top line of the BBC display is a common problem and m solved

by using the *TV 265 command that shifts the whole display down by one line.

Your problem of losing lines at the top and bottom of the screen means that your TV is in need of adjustment. If the controls are not accessible then you should find a qualified engineer to do the adjustment for you. All standard monitors and TVs should be able to display the full 32 line display from the

Old faithful

R J Woodberry of Farnham, Surrey, writes:

am considering learning machine code on my Spectrum but I am in need of a good, comprehensive book on the subject, I have heard that the Melbourne House publications are usually excellent and that the Zeus assembler is one of the best, but which should I buy?

The old faithful in my list of recommended books is about to hit the pages of PCW again . . . Spectrum Machine Language for the Absolute Beginner is a reasonable introduction to the subject, although it does contain quite a few typographical errors which are frustrating to say the least.

The Zeus assembler is indeed one of the best. Another which you might consider is version. Picturesque which is also very good.

Merging mania

of Garforth. John Poster Leeds, writes:

The Arcade Addicts Guide in Popular Competing Weekly (Vol 4 No 24) is a superb idea, however for me there is a big bug.

I recently bought a Spectrom and the Soft-Aid tape. Tour quide includes Pokes Pyramid, OB 20.00 Kokotoni Wilf and Jack &

Beanstalk (all on Soft-Aid) but I cannot figure out how to get them into the games.

I would dearly love to have unlimited lives in these, so please help.

The majority of Spectrum Pokes quoted in magazines are statements that have to be inserted into the short program 'Header' preceeds the main program on most games.

To do this, type Marge "", and then Load the tape as normal, stopping it immediately after the 'Header' has (your Spectrum loaded should be saying OK). The program can now be listed and more importantly Edited. The Poke statements can now be inserted within the program, but they must be placed before the final Randomize Usr statement.

Now Run the program, and start the tape from where you left off. The main program should Load and Run as notmal - except of course, you'll have infinite lives (or whatever) during the gamesplay. Good luck!

MIKE ROCHIP PROUDLY PRESENTS:

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SPECTRUM A broad Street A broad Street A bland Grand Space Slace Tr He Sing Tr He Sing Tr He Sing A broad Space Slace Tr He Sing A broad Space Slace Tr He Sing Tr He	TAN CAN TAN TAN TAN TAN TAN TAN TAN TAN TAN T	COSCINGO DORKE 64 Freeings 1 (1997) The prevention of the preventi	One To A A A A A A A A A A A A A A A A A A
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The Music Box



Unsurpassed

t times, it seems as though this column is turning into an extended plug for the Commodore 64. I must say that, right now, this doesn't seem a bad thing to be. With the computer market in such evident disarray to the extent that even the 64 seems on the point of extinction - it is surely time to reflect on the whole business.

From the musical point of view, the Commodore remains unsurpassed at its price and certainly second only to the Yamaha CXSM in the computer market as a whole. The curious thing is

that - CX5M apart - no succeeding machine has come up to the 64's musical standards. Even Commodore has produced new generations of computer with less to be said for them musically. The manufacturers in general seem uncertain whether to plump for better or cheaper small computers. As a result they have tended to produce unsatisfactory compromises.

The problem is clear, Businesses tend to write off the capital cost of equipment in a period of two or three years. As has long been the practice with cars, they will upgrade regularly - in fact, as soon as this amortisation period is over. The home owner, on the contrary, buys a computer to last, not to be replaced after a few years. A new business computer therefore has a ready made market, while the home computer either has to reach people who've never bought a computer or has to create a demand among existing computer owners.

I seems that the manufacturers are not impressed by music as a means of creating that demand. While plenty of effort is put into creating betfirmware. ter better peripherals and even better graphics, and perhaps even more effort is put into reducing prices all round, there is precious little evidence of anybody working on music and sound facilities. The result is that the best music machine we have, taking everything into account, is - in computer terms - almost a pensioner.

The worrying thing, then, is that the market will move ahead - one way or another and leave the many people who are interested in computer music having to get by with old computers. In some ways, thus is just another argument for software compatibility. That may be a forlown issue, but the smiation is made worse by the possibility that companies will withdraw or be forced to withdraw from the home market and that good machines like the Commodore 64 will find themselves largely forgotten

(except by their owners) without anything better - at teast, musically speaking - to replace them.

One reason I make these points is quite simply that the extent of the Commodore 64's contribution to computer music is becoming increasingly obvious, and not just in this country. Listening to the computer music competition entries, it was apparent that the decline of the 64 would leave a huge gap in this growing art.

Gary Herman

The Music Box is a weekly column with news, reviews and readers comments on all aspects of micros and music.

Any readors with experience of computer music music musics of computer music musics of computers with new product news are invited to write to drop a line explaining what they're doing to Gary Herman, The Music Box, 12-13 Little Newport Street, London WG2R SLD.





Book Ends



Book Wanning at the Races Using Your Computer Price £6.95 Milcro Any Supplier Interface Pubheathons, 9-11 Kensungton High London Street. WE SND

very punter's dream is to devise a system that beats the bookies. Paul Worden doesn't offer that, but his book demonstrates how to use your micro to increase your edge when gambling. Given enough time and effort, he says you can analyse data to show how to exploit the odds.

Worden Mr obviously knows his stuff and his style is informal in the extreme, but his programs, based on Microsoft Basic, are a 11 bnok's documented. The main failing, apart from some sloppy proof-reading and transposed pages, is that it's based on Australian racing.

While it's far from a getrich-quick formula, it provides an insight into how number computerised crunching can discover patterns and turn the odd losing tipple into an educated, winning scheme. Be warned though - you'll work hard for your profits.

John Minson



Book Advanced Commodore 64 Basic Revealed Price ES BS Milcre Commodore 54 Supplier Colins: 8 Grafton Stroet London WIX 3LA

here, C64 owners may ask, has this 'Advanced Basic' been hiding all this time? Nick Hampshire's answer is within machine language, for despite that reassuring 'Basic' in the title, to make the most of your Commodore you'll need to understand how the language works and be open to the assembly language rontines that will help exploit the ROM.

This is not a book for beginners, progressing as it does from memory architecture and utilisation by Basic, through arithmetic processing and the keywords to an extended Basic package listing, in code, that adds 31 new commands and modifies two others

The book's style is serious and technical; advanced experimenters will find much here to help break the boundaries of Commodoze's often criticised Basic.

John Minson



Book Out of the Inner. Price £8.95 Miere Any Suppli-Microsoft Prom. Penguin Hambre. Barmonda wentth Mizidlesex

new type of trespass taking рівсе through telephone wires and into the hearts of mainframe and mini-computers. Bill Landreth was apprehended by the FBI for becoming just such a 'ghost in the machine' and perhaps not surprisingly his book adopts the 'moral' slant of advising systems operators on safequards; after all, he is on probation.

Of interest to more than just the poachers and gamekeepers of computer security, though full of tips for both, Landreth's book presents a fascinating picture of a technological revolution which leaves itself, on average, only forty per cent protected in his estimation. Written with obvious expertise and in a generally clear style it reveals an insight into this curious obsessive fetishism for hi-tech and Stre. accompanying inumorallty. John Minson

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Readers' score

ow then, here is a letter from an old friend Michael Banbrook of Streatham who gave us a tip to type Call ZZ on Sherlock which we printed as Call ZZ-

There are some things that our readers seem united on when it comes to games: one is that Incentive's Moon Cresta is brilliant ("Thank God, Elite didn't get that one," says Mike), another is that Activision's Spectrum versions are awful, and the latest that is emerging is that Elite's games are overrated. "My games to avoid are The Pyramids (boring), Cookie (dated) and Kokotini Will (dreadful - one of the most over hyped games ever)" says Laurence Moran who recommends ISW, Knight Lore and Match Day, Jain Gibson of Harogata writes. "Avoid Fall Guy (do Elite have any good games?). Daley's Decethion (overrated) and Blue Thunder (how was this ever made a Crash Smash the same goes for fungle Trouble)." Does anyone want to jump to Elite's defence here? I didn't think their games were that bad!

lain goes on to ask for help with Backpsaker's Guide. "I know how to use the transformation crystals (drop them in the cells next to the large red discs), but how do I use the dynamite? Here are my high scores, without cheating: Jetpac 89,385: Arcadia 8,441; Zzoom 326,060; Ant Attack 46,879; Lunar fetman 122,565; Pyramid 75,516; 3D Death Chase 85,773; Panetrator 149,520; Manic Miner 26,310 and 3D Star Strike 1,123,600.

Staying with this subject for just a nunure, Adrian Byrne of Bracknell has funished Wilf using the infinite lives Poke we published and putting 0 for the number of lives (the game may look as if it crashes, but pressing enter restarts it). Adrian recommends this as the best method for

getting to see the secret of the amulet. He also has the following scores, obtained without Pokes Knight Lore 79%; Pyjamarama 90% 5,417 paces; Sabrewulf 84%, Atic Atac 99%, Hunchback 1,443,100.

That's not as good as Robert Lomax \$\overline{B}\$ Anglesey who has scored a terrific 3,084,200 on the latter game (witnessed as well). Incidentally, someone write from Bristo) with a name I can't read but no, I don't think you can get to the tower in Hunchback.

A game that owes a lot to Attc Atac is, of course, Bubble Bus's Wizard's Lair and Alan Salmon of Bristol has written with some invaluable tips for this. "Pick up everything except the skull. Keys are needed for square door, range for round doors and diamonds for pointed doors. Flashing goblet gives extra life, flashing helmet protects you for a while. Axe, pickaxe, etc. give you more weapons, food and drink are for energy, wings speed you up. Crown, coin chest, etc, give you gold, scrolls are spells that change gold into useful objects or energy, crosses allow you to pass snakes of the same colour. Creatures enter the room through doors, if one comes through a wall it means there is a secret passage you can use. Do not stand by an automatic door waiting for it to open because creatures can come through while they are closed. To use the macic lift the levels are - CAIVE (start). HAWLO. CRYPT. DUNGN, VAULT, LIAYR, LYONS."

One game that keeps its

popularity over the years is Chuckie Egg (I hope you all enjoyed the Pokes for filling in the holes in our special issue as much as I did). I have been very lax in not printing these two high scores earlier - Sara Ferring of West Lothian has got a very respectable 395,450, but is beaten by Charlotte Anderson of Dunbar (something in the air up there, I think) who has reached 1,106,040 on level 57, beating her husband George's "mere (sic) 1,082,590. One point spoils ita million does not register so l am placed quite low in the Hall of Fame!

You think you have troubles. Charlotte - I'm afraid it all pales into insignificance when compared to Allan Harvev who has sent in a witnessed score of 10 million on the Electron version! Allan writes: "In answer to Tony laques who was having trouble with level 32. First clear as much corn as you can then let a duck get you. Go up to the far left of the first left platform, want until the duck on the first centre platform has climbed down. Jump on to thus, up the ladder on to the right and jump on to the second right platform. Wait until the duck comes down the ladder and climb up this. The duck on the top levels should be climbing, or already up the ladder. Jump on to the third middle platform and up the ladder - you should now reach the top. My other high score is 277,835 on Elite rating Dangerous."

On a related subject, Malcolm Lawrence wants to know what the baskets do in Chuckie Egg 2. Can anyone help? "PS. Are AnF taking the mickey out of Sir Clive with the graphics of the C3? The lift when I finally reached it gave me the message 'Out of order'."

Let's finish this week with some quickles. Mike Page of Solihull can't escape from Atic Atac - yes, Mike there are three parts of the key! The third is hard to recognise but looks something like a crown. Maximum score on the game is 99%, Mike, so there may be a room you haven't found yet.

Mark Sutton of Swangaa wants to know if anyone has landed the F-15 in Digital Integration's superb Amstrad version of Fighter Pilot and hved to tell the tale. Well, I spent some hours trying, Mark, and only managed with two people working the controls - the documentation tells you all the essential limits to say within, but it is fiendishly hard to keep control of everything. The best tip is to rely on the instrumentation as much possible and keep practising.

Finally, here are some more things to type in the high score table in Dark Star -C&VG, Keith Campbell, Tony Thing, Joystick Jim, S. Brattel, C84, T. Bridge, Starblitz, Defenda, Invasion of the body Snatchas, Rommel's Revenge. Pinback, Martin Smith, Motty, Cheesecake, Lynn, Linda, Mash, Robin Meb, QL. These come from Dave Gooch of Rayleigh who also wants tips for "that brilliant Addictive game Invasion of the Snatchas - I can only manage 13,800."

Tony Kendle

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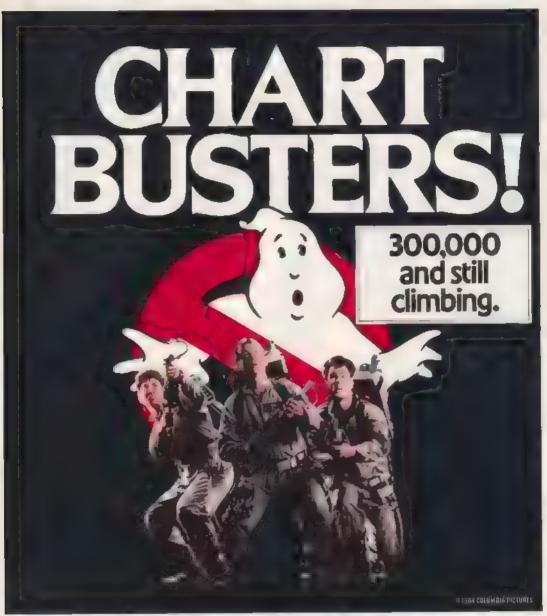
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Study the table below and look at the column for the machine you have - these are the games you'll need to master. Send your high scores in on the form below, making sure that your scores are authenticated by a responsible individual signing the Joyne. Any score achieved using technical short-cuts — such as infinite lives Pokes — will not be accepted.

Between new and September Tuny Rendle will be beeping you up to date on the Arcacio-Averance page with just who has the scores to beat. Then, in September, the top three concess as each marking will battle it out for a place in the final and the chance to be the first to play and the exercit frames.

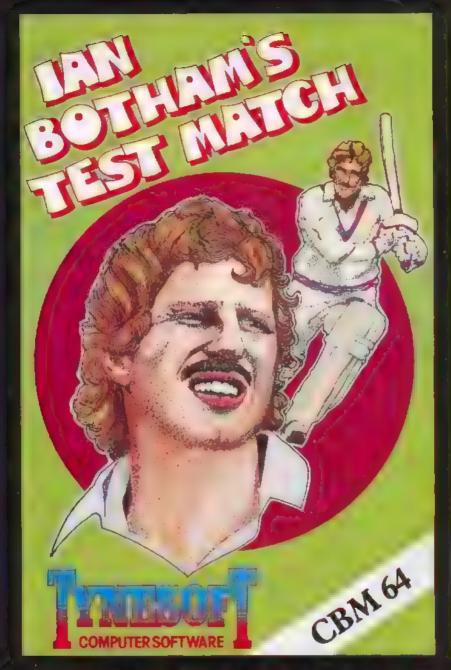
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Tony Bridge's Adventure Corner



Keep the faith

t's good to see that there is a steady flow of software now coming onstream for the QL. The machine hasn't sold very well, but those of us who took the plunge at the beginning are staving faithful in the hope our faith is rewarded. It is an exasperating machine (those dreaded words "Bad or Changed medium" are worse than "You see s Troll blocking the way, what next?"1), but the included software is so good that one must persevere (and I mean persevere - I've just spent two hours trying to get a precious set of data to load back inl). Software for we adventurers is rather scarce at the moment - with the exception of Talent Systems', Zkul and West

Apart from these two, I haven't seen much else, until this weak - S.B. Software of Diss have sent me their Fantasia Adventure to look at.

It's an unfortunate fact that many softwere houses think that reviewers of adventures need a challenge in their lives, and consequently don't provide maps or solutions with their new releases. I don't have the time required to work all the way through every adventure, so first impressions mean a lot - in the case of Fantasia Adventure, first impressions have been so-so. This one follows, as far as I can tell, the usual route - you, the hero, are stuck in "a hostile world of ancient cities, complex cave systems and harsh deserts.", as the advert promises. This means that you will find plenty of mazes and quick ways of dying!

The adventure is not in the infocom class, let us say. Right III the start, you'll find an ancient scroll, just asking to be read or examined. Asking for help, or examining the scroll at this point, gives the player a rather obvious Biblical reference (Ezekiel 3.1, look it up) and other pleas for help are equally boring (crossword clues, for example, which wouldn't worry a six-year-old - not mine, anyway!). On the other hand, there is something to be said for this easy start.

In this regard, Fantasia Adventure comes up trumps. There is, as I've indicated, the Ancient Scroll most at the start, and very close by is the Obligatory Key, and the Necessary Heimet, Another step further on is the Lamp, nestling by the Book. All this is standard Middle Earth-ian fare, and the puzzles associated with the objects are not so difficult as to cause terminal frustration. Any ordues I may have concern the QL's innate drawbacks - I'll never understand, for instance, why a computer with such a fast chip should be so achingly slow to process commands. The good old 2XB0 was quicker, I'm sure! And the type-ahead keyboard does not reward the impatient player who taps at the keys while processing is going on - if you are a confident typist, of course, several commands may be pre-typed in this way. I was disappointed that no use was made of the Microdrives and random access. Thus, once the adventure is loaded into memory, that's " - it would make for a more interesting game if locations could be loaded in as required from the cartridge. Apart from this, though, and the rather restrictive command structure ("Get all", for example, is impossible, and it's no good typing "Get the Candle and the Book", it just isn't recognised), the adventure is a good traditional comp for the QL, and very reasonably priced at just £8.50. Write to S. B. Software, Nicholas Street, Diss, Norfolk

Hands up those of you who remember the Beatles. Well, I was never an old hippy, but still I feel nostalgic whenever the emblems and badges of those times are used. It's a temptation, of course, for authors of any kind to use them, and a couple of adventures have come my way which stir the old recollections.

The first is from WCB Software of Derby, who sent me the first two parts of what they call "a Quadrology". Abstract and Contrasts are the adventures in question, and their origins are plain from the quotations plastered over the cassette inserts fhandwritten, so I don't

know if these will appear on the final version) – "A splendid time is quaranteed for all" and "Nothing is real", Beatle lans can provide the titles of the songs that the quotes come from.

The two adventures are written with the Quill (and, given that limitation, it's the usual thing that you might expect.) Actually, although I've stressed the Beatle aspect, another 60s hero, Dr Who, is the main point of reference in the first, Abstract.

While it retains the standard Spectrum character set, Contrasts has a rather attractive skinny set, unlike the usual BBC-like design.

In the latter adventure, you are still a Time Lord, but this time in Pepperland, along with other characters such as Mungo. McJaffy and a snoring dog. With locations such as Psychoville Manor, and juicy details like Blood running in the Freezer, a splendid time in guaranteed for all here! Write to: WCB Software, 49 Borrowash Road, Spondon, Derby DE2 7OH.

Now to the second adventure for those of us who like to indulge a tear of nostalgia. This is from Mushroom Software, who are on their own admission "the smallest software company in the world, with an output # two programs a year". Their catalogue is varied, consisting of, among others, a Rubik's Cube solver - now they have an adventure, Software Pirate. The subject matter is pretty self-explanatory, and features a sort of house-character called Cedric. the hero of ;most of the other Mushroom programs. It's another Quill'd program, and has no lancy re-designed character sets or Bashy screens. Il is, however, extremely good value at an amazing £1.49, mail order

In Software Pirate the locations are many, and are easily mapped (though I certainly didn't get to them all, it's not that easy), and are well-populated by many local characters, who can be spoken to (will they divulge clues - I'll find out sooner or later). Objects abound, and many of them are useful, like the radio that can be switched on. As a postscript, Mushroom have asked me to pass along a request to the couple in Solihull who wrote to them regarding help in their first adventure, Bigtime, If you're reading this Corner, Solihull, Mushroom would like your address so that they can reply! Mushroom Software, The Plymouth Software Exchange, Plaza Arcade, Bretonside, Plymouth.

This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitialis you can expect to encounter. So, if you have an Adventure you want reviewed, or it you are stuck in an Adventure you cannot progress any further write to: Fony Andge, Adventure Corner, Popular Computing Weekly, 12-13 Little Newport Street, London WC2R SLD.

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ADVENTURE

Message from Andromeda on

Amstrad. I can't get any further when reaching panul/square plate or glass pedestal. Mr W Prime. 130 Hazel Ave. Bury. Lancs

Mission Impossible on Vic 28. Can't open white vollow or blue door Paul Sevan. 20 Hill Green, Pitsoa, Basildon. Essay.

Castle of Terror on C64. How do I get back out of the secret chamber and how do I free the girl? Peter Dent, It Stavordale, Sr. West, Scaham, Co Datham

Mission 1 Project Volcano on Amstrad, How do I got into the lift past the lift droid? Charles Taylor, Mendowede, Forcott, Richmond, W

Yorks
Eurelian How do I got past the sun
shooting man in prehistoric adventure Torbjorn Troldmyt N-8484 Rod
in Romadal, Norway.

Jewels of Babylon on Amstrad. How do you dual with the crocodile in the swamp, or the body of the salter? John and Linda Marshall, 3 Silvermallee Ct. Reimslott 611: Perth W Australia

Orban Upstari on Spectrum. How do you get past the officer at the sirport? Where is the book? Johnsthan Huscock, 371 Newton Rd, Lowion, Warrington, Cheshire

Ring of Power on C64. What is the password to gain access to the palace? K. Ryan. Avundell, Chutch Rd. Poninewedd Combran. Gwent.

Pirate Cove as Vic 20. Now do I get out of the London flat? Stephen Ryan, Old Bridgend Inn, Pontnewydd, Ownbran, Gwent

Time Lords on Americal CPC 484. How do you get the keys from the shed in zone 17 (if with a shovel, how do you get that?) Peter V Degorgio, 35 Main Street, St Julian's, Main GC

Snowball on Amstrad, How do I get off the bottom layer? Can anybody explain what happens after typing 'p? Andrew Walton, Finlow Hill Cottage, Over Anderley, Manniesfield, Cheshirs.

Castle Quest on BBC. I have found the wand. Now what do I do with it? P Kowabruk. 42 Clibran St, Cheetham Hill, Manchester S.

Spiderman on Spectrum. How do I got Bio Gem and how can I defeat Electron and Doc Octopus? Andreas Schnordewind. Dessauorator 58a, 4050 Moemchengladbach I. Germany. Munitains of Ket on Spectrum. How do I cross the ravine or enter caves beyond take? Bill Stansheld, 16 Snowdeley Green, Wheaten Aston. Stafford, ST19 BQB.

Starcross and Infidel on C64. How do you get the red rod from ratant's nest? How do you find the pyramid in Infidel? Michelangolo Pypsan, 9 Caroline Rd. Handudao, Gwynodd

Jewels of Sabylen on Amstrad. How do I find the key to the door in the dusty corridor? How do I get over the bridge? Richard Charlete, 117 Scale Gate Rd, Upperby, Carlisle

Espionage Island on Spectrum. Where's the rope? Keen Harsuker. Elzenquard 47, Soxiel. Holland

System 15000 on Spectrum. How do you get your life recognised by the Selera Socurities system? T Williams, 91 Britiam Dr. Grandiam, Lines

Eye of Bain on Spectrum. How do you get past the black beast, get things from the tinn and cross the raymo? David Ledbury. 82 Westdanne. Woodsite, Tellord

Doomdark's Reveage on Spectrum. Where is Morkin, and hoe do you lind han? Where do you find the rowns and spells? David Ledbury, 83 Wnaldstone, Woodside, Telford

Inca Curse on Spectrum. How do I get past fire and the panelled room? Any other advice welcomed David Ledbury, 82 Wealdstone, Woodsido, Telland.

System 13000 on Spectrum. Does anybody know what the Midminster account number us Tany Scrivenes, 14 Upton Dene, Grange Road, Sutton, Surrey.

Mountains of Kat on Spectrum. Can anybody give me directions from the scorcod lunnel to the hut? Stephen Pollock, 145 Paveril Avenue, Glazerne

Eureka on Commodore 64, Part 2 What are in the catacomba? What do I do with the chicken and the egg. Part 3 What tune do I play to crack the crystal and how do I make the hid move? Part 4 Have the photo and the hink ID card. How do I make a valid ID card? Rich and Kane. 180 Santon Road, Leigh-on-See, Essey.

Zodiac on Oric. What do I do in the cave? How do I open the call I can't find the key? A goodsman, 73 Fellows Court, Weymouth Terrace. Backney, London F2.

The Sorceror of Claymorgue Castle on Commodore 64. i cannot get up on to the barlements and I keep getting lailed in the ballroom Also, the stone door won't open. Can anybody belp? S D Shipp, Legg of Mutton & Cauli-Rower. 48 The Street. Ashtead. Surrey

Sherlock on Spectrum. How do you get inspector Learnade to arrest Mrs jones? Nest Harrison, 27 Lindtick Close, West Bessararr, Doncaster, 5 Yorks

Circus on spectrars. How do you open the wagon door? Where are the allipers and can you open the chest? John Toal IIII Greenwood Crescent, Cotbridge, Isnarkshire.

Twin Kingdom Valley on Spectrum. How do you kill the dragon in the castle? Christiphor Hollom, in Duke Street. Commanhay, likeston, Derbyshire

System 15000 on BBC. How do you access further in Midmunster Bank. Boon or Routledge? Any holp at all needed Paul Tang. 21 Main Street, Bransion, Burton-on-Tront, Shifs (Toi 0283 88-83).

Lards of Midnight on Commodore. Tips wanted on beating Doomdark by use of armies 5 D Christian, 48 Wallgate Road, Liverpool 55 (Tel 051 723 7052)

Castle Quest on BBC. How do you get out of the dungeon and get past the spader? Guy Nooh, Rose Hill Lodge, Rose Hill, Dorking, Surrey.

Castle of Terror on Commodore 64.

Any help appreciated. Gavin Day.
Rossall Road, Cleveloys, or Blackpool,
Lancs

Colditz on Spectrum. How do I get past the bayonet and how do I free the POW F Still. 2 School House, Well close Square, London 阿 (Tel 01-709 n128)

Eric the Viking on 88C. How do I get the things from the eagle's near? How do you get the smaller? What are the bra and specs for? M Rowarth. If Woodview Driva, speen, nr Aylesbury, Sucks.

The Hobbit on Commodore 64. How do I get the past the bulbous eyes? How do I get the Barrel Itom the winc room ## float down the river safety? Richard Ketts. 160 Station Road, Leighon-Sea, Essex

Eric the Viking on Spectrum, How do you get the feather out of the dragon's nose? John rundie, 26 Western Road, Aldershot, Hanis.

Eureka on Spectrum. Part 5 What number opens the door? I can help with Parts I, 2 and 4. Ian Sumter, 10 All Saints Close, Springfield, Chelmsford, Feensy.

Euroka on Spectrum, How do I greet Nero and how do I get into the plane? I R McAdam, 5 Bridge Close, Terloggan Newquay, Cornwall

Hampstead on Spectrum. How do yo get past the butler in the mansion in ■ John's Wood? Tanwen Sparks, 3 Yateley Road, Edgbaston, Sirmingham 816

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(Mikro-Gen)

All figures compiled by Ram/C

Rocky Horror Show

Herbert's Duramy Bun

Top Twenty

1	(3)	Elite (BBC Electron C64)	Firebird/Acornsoft
2		Soft Aid (Spectrum C64)	Various Artists
3		Way of the Exploding Fist (C64)	Melbourne House
4			
- 99		Jet Set Willy 2 (Spectrum/ C64)	Software Projects
5		Dambusters (C64)	Sydney/US Gold
6		View to a Kill (Spectrum C64)	Domark
Z	(7)	Knight Lore (Spectrum/BBC/Amstrad)	Ultimate
8	(18)	Cauldron (Spectrum) C64)	Palace
9	(13)	Rocky Horror Show (Spectrum C64)	CRL
10		Alien 8 (Spectrum BBC Amstrad)	Ultimate
11			Beyond
12		Herbert's Dummy Run (Spectrum C64)	Mikro-Gen
13		Revs (BBC)	Acornsoft
14	(-)	Nodes of Yesod (Spectrum)	Odin
15		Dun Darach (Spectrum)	Gargoyle Games
16		Starion (Spectrum)	Melbourne House
17	(14)		
	3. F		Sega/US Gold
18		Tapper (Spectrum C64)	Sega/US Gold
19		Minder (Spectrum C64 Amstrad MSX)	DK'Tronics
20	(-)	Pitstop 2 (C64)	Epyx/US Gold
Fign	ELLER CO	ompiled by Ram/C	

Readers' Chart No 31

(1)	Soft Aid (Spectrum/C64)	Various Artists
(-)	Elite (C64/BBC/Electron)	Firebird/Acornsoft
(2)	Knight Lore (Spectrum, BBC, Amstrad)	Ultimate
(3)	Confuzion (Spectrum/Amstrad)	Incentive
(-)	Rocky Horrow Show (Spectrum)	CRL
(4)	Gyron (Spectrum)	Firebird
(7)	Everyone's a Wally (Spectrum/C64)	Mikro-Gen
BOSEC	Minder (Spectrum/Amstrad)	DK Tronics
(5)	Alien 8 (Spectrum/BBC/Amstrad)	Ultimate
(2)	Starion (Spectrum)	Melbourne House

Winning phrase No 31: "I often drink I light ales" from) 5 Russell of Fareham, Bants who receives £25. Other who came close include "Giant Sir fell – KO!" from Brace Greig of Excles, and "In he an old golfer?" from 5 G Young of Garrowhill, Glasgow.

Now voting on week 33 - £25 to win

Each week Popular is compiling its own special software top ten chart - compiled by YOU.

And each week we will send £29 to the person who sends in, with their chart votes, the most original (witty, neat or clever - but never rude) phrase or sentence made up from the letters (you don't have wuse them all) in the titles of the top three programs in this week's chart, published above.

You can still vote in the chart without making up a slogan - but you won't be in with a chance of winning the prize.

All you have to do in fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to: Top 10, Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP

Voting for Week 33 closes at 2pm on Wednesday July 10 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name	My top 3: Voting Week 33
Address	1
This D400111661666444644444444444444444444444	2
***************************************	3
My phrase is:	

Bubblers:

New Releases



WITCHLESS

Metabolis is a Sorcery-style program from Gremlin Graphics - its first game title for the Spectrum in quite a long while, It has the immediate virtue of being a Sorcerystyle arcade adventure that does not feature spells and witches. It also looks quite good on screen.

The plot involves your having to free the world from the grasp of the Kremlin, who are some sort of alien something or others that happen in have the same name as the famous centre of the Red menace. Humanity generally has been turned into assorted mice and birds, and you have been part transformed so that you swing uncontrollably from bird to man. This misfortune, though, helps you seek out the serum that will stop your transition. Next you blow up the Kremlin with four pieces of nuclear fuel and save the world. The usual stuff.

It's multiscreen, lots of sprites wandering about in the shape of wacky animals. flickering things to collect not an original bone in its body.

On the other hand it looks good, the design of the sprites is amusing (although some of the backgrounds look curiously simple and drab) and it seems to hang together as a game.

Program Metabolis Price 46.95 Spectrum Supplier Gremlin Graphics Alpha House 10 Carver Street Sheffield

SI 4FS

CHALLENGING

Crystal Theft is a very complex text adventure from Wicca Soft.

Complex in several ways: first it can handle very long sentences like 'Go south then take the key and climb the rope', second, the structure of the game is devious: it's in real time and many of the puzzles must be solved within a time limit. Finally, it's very, very hard indeed.

I hate summarising the plots of adventure games, but here's a quick jaunt through the salient points of this one: Vegan Wars, technologically superior baddies, but crack Intruder commando units from Earth, flaw le Vegan's dictatorship (controlled by priesthood), weak strategy, can Earth's defences repulse invaders? Can you retrieve the faster than light crystal from the Vegan temple?

The screen layout is helpful description of location, invaniory, computer response and your input are divided into different windows. I'm not sure about the blue text on green background though.

Reading through a reviewer's cheat sheet reveals some of the subtleties to be found later on in the game. I can't wait until I find out what Things which get lost can generally be found again when you get fed up arguing philosophy' means.
An excellent and challeng-

ing text adventure.

Program Crystal Theft Price £7.95



Micro Amstrad Supplier Wicca Soft Bollington Road Bollington Nr Macclesfield Cheshire SK 10 SKL



ALL GRAPHICS

Glass from Quickeilva has been getting some excellent reviews recently. It's not difficult to see why; graphically it's fairly spectacular.

The problem is, though, that graphics alone isn't enough and I really don't think there's much of a game

Good evidence of lack of real plot ideas is when a game is divided into several sections - Class has lots of sections

The plot has you blasting through enemy defences in an attempt to reach the city strongholds. This involves lots of big alien sprites on a Buck Rogers style 'moving staircase' background.

Later sections of the game feature some beautifully designed and vast alien spaceships - it's really very pretty.

Really though this is only a series of pretty screens with a lot of blasting. It lacks a sense of purpose and I don't find the graphics enough to hold my attention through more than a couple of plays. Still the programmer(s) is/are obviously hot stuff I look forward III other games.

London WIR 7DR

Program Glass Price £7.99 Micro Spectrum Supplier Quicksilve Liberty House 222 Regent Street



ON THE HOP

Buck Rogers was one of the classic arcade games. The Commodore version was also fairly popular and now US Gold have converted it to the Spectrum.

The conversion is actually fairly good. The 3D effect has been achieved convincingly with hardly a colour clash problem in sight. For those unfamiliar with the game it is a zoom around between zapping electron posts blasting against aliens that not only match you zoom for zoom but, most devastatingly of all, hop.

It's a high speed affair and really my only objection to it is that this kind of game is dreadfully old hat.

It's sad how quickly last year's (well, a couple of years back) epics grow out of date. If you're already a fan of the game this is a good Spectrum version with little competition. I wouldn't recommend it otherwise though.

Program Buck Rogers £9.95 Price Micro Spectrum Supplier US Gold Unit 10 Parkway Industrial Estate Birmingham B7 47.Y

Compiled by Greham Taylor

New Releases is designed to fet people know what sollware is coming on the market. If you have a new game or utility which you are about to release send a copy and accompanying details to: New Releases, Popular Computing Weekly, 12-13 Little Newport Street. London WC2R 3LD

New Releases



LETTERS FROM MAX

Beyond is rather surprisingly leaping on to the educational software bandwagon.

On perusal, I would have thought the program puts more emphasis on learning one's way around the keyboard, and identifying sounds, than the alphabet itself. Divided into four sections, parent and child are led through the alphabet by Max. a sort of spacehopper (remember spacehoppers?) with legs. Max does appropriate actions for each letter. though he bends his antennae for A.

Now, on to Press a Letter, where Max exacts the words corresponding to child's key DIESS.

Thirdly, Max hauls each letler on to the screen.

Once the child is familiar with the program the fourth section provides a letter quiz with Max enacting his routines and the child pressing the right key.

Program Remper Room Price £9.95 Micro Commodore III Supplier Beyond 153, Farringdon Road

ONE OF THE BEST

While it seems pretty clear that the C16 was nothing like the success Commodore expected it to be, last Christmas a sizeable minority did opt for the machine. Those people need games urgently and very few companies are supporting the machine.

Of the companies that are backing the C16, Gremlin Granhics is emerging as the company taking the most trouble over the end result. Sword of Destiny might even have made a few non C16 owners pretty fealous.

Basically, you slash away at all sorts of phostly and phoulish sprites, collecting the ubiquitous flashing objects and travelling around by a mixture of bouncing (like in yoghuri adverts) and jumping into warm air vents which lift you skywards. The graphics are big and detailed and by C16 standards this is one of the best yet.

Program Sword of Destiny £6.95 Price Micro C16 Supplier Gramlin Graphics Alpha House 10 Carver Street Sheffield

SOPHISTICATED

SI 4FS

Atlantis Software was responperhaps for favourite card game simulation, Eights, which also happened to be a budget price item. Now the same programmer and company have issued Chinese Patience, like Eights a card game seldom covered on micros.

Chinese Patience is one of the few forms of the game which can be played competitively - you challenge the computer to get rid of its cards first. The rules are essentially simple: there are nine piles, eight 'general' ones and the opponent's playing hand onto which cards may be discarded. The piles are grouped into different rules: one section must have cards ascending of the same suit, another group must be descending cards of alternate colours. You may discard a card on to your opponent's pile if it is the same suit and one number above or below it.

You may keep taking and discarding cards as long as

hinese Patience

possible when you can't go, it is the other player's turn. It's actually a very sophisticated game, much thought is needed in deciding where to place the cards and, consequently, that the computer plays very well is a tribute to some very ingenious machine intelligence.

The screen layout is as neat as it could be, given the need to display so many different and often lengthy piles. At £1.99 this is a fine successor to Eights.

Program Chinese Patience £1.99 Price Micro Spectrum Supplier Atlantis 19 Prebend Street London NI SPF

LIP TO PAR

I've always thought that golf simulations don't get the attention they deserve from programmers - you tend to end up with a result that is often in Basic, features matchstick men and simple graphics and generally lacks the professional touch. On the other hand I've often found that presentation excluded. golf works well as an entertaining computer simulation.

Now we come to Handicap Golf on the Amstrad from CRL, and it illustrates some of the points made above. While the oraphics are simple with dots for ball and hole and a 'Saint'-like matchstick man for the golfer, the game is a lot of fun. Holes are simply drawn, a few trees here and there, simple yellow for bunkers and so on - each one extends over several screens so there are options to preview each before you slice away.

You have a wide selection of golf clubs, both woods and irons, from which to choose and must take into account not only the power you give to the hit and direction but the wind power and direction as well. When you make it to the hole you get a close up and a little cursor that must be aligned with ball and hole. It's

This Week

London ECIR 3AD

Program	Type	Misro	Price	Supplier	Hypertron	Arc		Spectrum	E1.89	Sigma Soft
Beach Head	Ara	BBC	E9.95	US Gold	Laser Shoot	Arc		Spectrum	€1.99	Srgma Sott
Chuckle Egg 2	Arc 5	Amstrad	€7.90	A+F	Metabolis	Arc		Spectrum	E6.95	Gremlin Graphic
Strip Poker	S	Afari	29.95	US Gold	Spy vs Spy	Arc		Spectrum	69.95	Bayond
Chuckle Egg 2	Arc	Commodore 64	27.90	A+F	Gravity		1	Spectrum	063	Anima
Mig Alley	Arc	Commodore 64	€9.95	US Gold	Magnetic Bottle	Ed		Spectrum	E15	Anima
Skylox	Arc	Cammedore 64	€12.95	Ariolaselt	Relativity	Ed	21	Spectrum	£30	Anima
Supernews	Ut.	Einstein	£196	Bubble Bus	Rotation	Ed		Spectrum	£15	Anima
Dwarls Domain	Ad	Spectrum	C2.99	Sigma Soft	Chinese Patience	S		Spectrum	€1.99	Atlantis
A View 🖺 a XIII	Arc	Spectrum	€10.95	Domark	One on One	5	F	Spectrum	28.95	Arrolasoft
Buck Rogers	Arc	Spectrum	€7.95	US Gold	Character Set Coll	Ut.	Ď.	Spectrum	24	Sigma Soft
Glass	Arc	Spectrum	£7.99	Quicksilya	Double Height Print	1Jt	į	Spectrum	£3	Sigma Soft

New Releases

NEAR PERFECT

Beyonds' Spy vs Spy, to my mind one of the most addictive Commodore 64 games of the year, has now been converted to the Spectrum. What's more I think it's as perfect a conversion as there could possibly be - it looks exactly the same as the Commodore original.

The success of the game is. I think, the way it completely captures the atmosphere of the original Mad cartoons the excellent graphics ensure a superb graphical duplication but it's more than that, traps and weapons - bombs The cartoons are full of snig- that can be affixed to desks gering malace and undis- and drawers, buckets of wacruised victorsness, bombs ter to put over doors and so are black canonbalis with a on. The idea is that you set up fuse on the top and behind traps and watch gloatingly as every door lurks a bucket of the other spy in the process of

flavour - the computer dis- 'The spy explodes and in skelplay is in two sections each etal form ascends to heaven. showing the current location. It's hilamous - the only way to of their the black or white avoid the traps is to keep a spy. As you move your spy careful watch on what the enfrom room to room so the emy is doing, so you could appropriate display changes, argue that there's quite a bit The nominal objective of the of skill in it too. Buy this game. game is to collect some secret plans and escape with them. Program Spy vs Spy In fact though the real motiva- Price tion to play the game is to Micro blow up the other spy. Unlike Supplier Beyond normal arcade games where complete obliteration is zap/ pow/dissolve, in Spy vs Spy it is deliciously slow.

all quite entertaining, but I can't help thinking that if I can get in under par every time it must be pretty easy.

Each spy has a selection of

Program Handicap Golf



looking for plans accidentally The game has exactly this triggers them - then blam!

> Spectrum Lector Court 153 Farringdon Road London ECIR SAD

Price Micro Supplier CRL

£7.95 Amstrad 140 Whitechapel Road London El

GREAT GRAPHICS

Answering the critics who have scorned Ariolasoft's American imports for being out of date, the company is rush releasing Electronic Arts' Skylor for the Commodore III in mid-July, just six weeks or so after its US launch for the Commodore, although it's been kicking around on the Apple over there for some time.

Skyfox is an air combat game - basically it's a guesnon of getting your plane in the sky and then bombing everything that moves. What lifts it above the level of similar scenarios is the superb quality of the graphics.

You are the pilot - with a bewildering number of permutations of skill level and type of war you wish to fight in. You peer out at the landscape through a remarkably realistic representation of your cockpit: these really are some of the most stunning graphics ever. The ground appears at first to be spattered with molehills which on closer inspection turn out to be surprisingly detailed animations of tanks - all awaiting obliteration.

You can graduate from cadet m 'ace of the base' (not sure about authenticity of the jargon here) using continuous laser cannons or heat seeking missiles - or even the boring old guided variety - in a number of battles ranging from a mere spal (training mission) to 'massive on-slaught'. Great graphic details and destruction; what more do you need!

If you're into quality shoot em ups and doglight simulations this should do you well.

and at £12.95 on disc and £9.95 cassette it's actually one of the better value for money American imports.

Program Skylox £12.95 (disc) Price £9.95 (cassette out in August) Commodore 64 Micro Supplier Ariolasoft 19 Palace St London SWI

SPRITELY.

One on One was a basketball came issued first on the Commodore im america where it did well, then imported by Ariolasoft and ussued here. where I think it did less well. Now it's been converted to the Spectrum.

The game pits two basketball players against each other; the focus is all on the basket end of the court and the idea is that the simulation is very accurate indeed. The players get tired and are even individually DIOgrammed to behave slightly differently.

However the problem with the game is that you never really get a chance to test out the 'realism' of the simulation aspect, simply because the graphics are so poor and characterless. What you get are two small, flickery sprites - it's difficult to get any great sense of character animation.

Program One on One Price £8.95 Micro Spectrum 48K Supplier Ariolasolt Suite 105/106 Asphalte House Palace Street London SWIE SHS

This Week

Games Ald ш Spectrum 65 Sigma Soft Proportional Chars Lii. Spectrum Sigma Soft Sound FX Mark II Spectrum 23 Sigma Soft Speech Synthesis Spectrum £3 Sigma Soft Uh €4,50 Speedy Load/Save Ut Spectrum Sigma Soft The Artists Comp. Spectrum MA Soft

Key: Ad - adventure. Arc - arcade Ed - education

■ - strategy-simulation

UL - Utility

A - F. Canal Side Industrial Estate, Woodbine Street East, Rochdate OL16 5LB 0706 341111 Anima, 23 Crawley Avenue, Hebburn, Tyne & Wear NE31 2LT 0632 832825 Atlantis, 19 Prebend Street, London N1 8PF 01-226 6703. Beyond, Lector Court, 153 Farringdon Road, London EC1R 3AD, 01-837 2899. Bubble Bus, 87 High Street, Tonbridge, Kent TN9 1RX, 8732 355962. Domark, 204 Worple Road, London SW20 8PN 01-947 5624. Gremlin Graphic, Alpha House, IIII Carver Street, Sheffield S1 4FS. 0742 753432 MA Soft, 52 Aston Avenue, Winslord. Cheshire CW7 2HX. Quicksilva, Palmerston Park House, 13 Palmerston Road, Southampton, Hampshire SO1 1LL, 0703 20169. Sigma Soft, 8 Pine Dale, Rainford Merseyside WA11 8DP US Gold, Unit 10 The Parkway Ind Centre, Heneage Street, Birmingbarn B7 4LY 021 359 3020



Little brother

ossibly one of the worse aspects of 1984, the year of Big Brother, was the film of the book 1984.

The film took the standard approach towards the book, which is that George Orwell was worried principally about a totalitarian prving state.

There are many worries concerning Big Brother, where for BB we can read the vast all-seeing computer database (choose your own poison, your own pet totalitarian organisation). The scenario is this: soon every part of our life will be documented and stored away on a set of computers. This means, so the argument runs, that to find out everything about a certain person, all that will be necessary is to connect the computers to crosscheck information.

For computer to talk to computer, assuming that the information is not stored on one vast machine (very open to industrial action, system crashes, or bombs), then there has to be some means by which the computers can talk. To talk requires a communication channel, and all communication channels can be overheard. As they said in the war "Careless talk costs lives". If we have a distributed communication system then there are distributed opportunities for

The opportunities to overhear a computer conversation are increasing in frequency if we have a system with many users who access the machine by telephone. In the gloriously impractical and much over used "we will all work at home at terminals connected to a central computer" syndrome, then the possibilities for illegal intrusion by professional intruders as well as amateurs are greatly increased. The computer may not be a high security system with personal files

on individuals, but even so intrusion for commercial espionage cannot be ruled

It is difficult to protect any installation completely, and the problem is not just LB (Little Brother, the hacker) but FB (Foreign Brother, the spy). There is one way in which any installation can be totally protected from illegal conversations (by use of the standard communication channels); that is, to make the computer a deaf mute. The only computer safe from talking to LB or FB is the computer which never communicates with another. A computer which never talks to another is in dangerous isolation. because when it is sick or injured it cannot operate successfully.

An integrated network of computers sharing information is subject to the attentions of both LB and FB, whereas the isolated computer installation is subject to sabotage from FB, and industrial ac-

tion from its employees.

One reason why sensitive information (such as DHSS records) are being stored on separate computers is this worry about industrial action. By networking these computers, the opportunities for electronic intrusion become greater. No computer is completely safe from the attentions of a determined and knowledgeable little brother.

Orwell's all-seeing surveillance system was tied into a concerted attempt to change people's attitudes by changing their language. The psychological implications of the effects of language on people's conceptual structures were - I think - far more important for Orwell than the all-seeing pervasiveness of BB but, as ever, the message became lost in the medium.

1984 (the book) was a great success, but the novel was not the best medium for expressing Orwell's message. In 1984 the all-seeing BB was far more interesting and had a greater impact on the readership than the subtle message of indoctrination by changing the language.

Personally, I am more worried about political doubletalk than I am about BB.

Boris Allan

Sharp practice

Puzzie No 165

You may remember Sammy Sharp, the wellknown trickster. If you do, you will no doub! be relieved to hear that as a result of his last escapade, he is spending a few months as a quest of Her Majesty!

However, let me warn you, lest you be lulled into a sense of false security, that his sister Samantha, who is every bit as willy as her brother, is still to be found operating illegal betting games at the local racecourses. One of her favourite gambles is as follows:

The punier is asked to shuffle a standard deck of playing cards, and he is asked to deal three cards face up onto the table. If the product of these cards is an exact multiple of their sum then the punter wins, otherwise he loses.

How would you estimate the chances of winning with this bet? (Ace = 1, and Jack, Queen, and King count as 11, 12, and 13 respectively).

FOR A=100 TO 316
FOR C=10 TO 316
FOR C=10 TO 316
FOR C=10 TO 316
A=0TR3(A) | C=0TR3(A) | C=(A+C) = | A+C|
A=0TR3(A) | C=0TR3(C) | P=0TR4(P) | Q=0TR4(Q) |
C=0TR3(A) | C=0TR3(C) | P=0TR4(P) | Q=0TR4(Q) |
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Solution to Puzzle 160

Answer

A = 218; B = 87; C = 24; D = 17.

Prom the number of spaces in the grid we can determine that the value of A is in the range 100 to 316 (6 across), and C is in the range 10 to 31 (2 across).

The program gives values in the ranges to A and C by means of two For Next loops, the values of 2, 4, 6 and 9 across, and 2 and 7 down can be calculated. Line 50 checks to see if the various digits that interlock in the grid are the

This then prints out the two values of 218 and 24 for A and @ respectively. Once this has been done the values of B and D can also be easily found by a similar method.

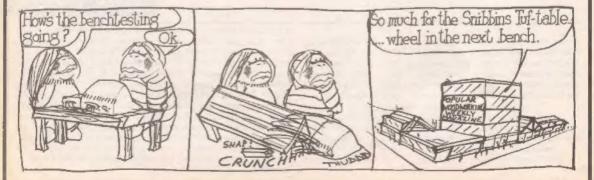
Winner of Puzzle 160

The winner is Johan Bosschem of Gent, Belcium, who receives £10

Roles

The closing date of Puzzle 165 = July 31.

The Hackers



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Eine Bine

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